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Dedicated to the Memory
of
JOHN HUNTER
on
The Centenary of His Birth

INDEX NUMBER

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THE SURGICAL CLINICS OF NORTH AMERICA

Volume 8

Number 6

FOREWORD

AFTER a lapse of almost two hundred years John Hunter's influence is still a living and pulsating force in scientific surgery. Because of the universal recognition of his influence it is only fitting this year of 1978 the bicentenary of his birth that the Pacific Coast Surgical Association should dedicate this volume of THE SURGICAL CLINICS OF NORTH AMERICA to the memory of this great master.

EDGAR L. GILCREEST
Secretary

S F R A N C I S C O

CONTRIBUTION BY
DR. EDGAR LORRINGTON GILCREEST

UNIVERSITY OF CALIFORNIA HOSPITAL

JOHN HUNTER
THE FOUNDER OF SCIENTIFIC SURGERY

It is not my purpose to present to you a hero or an idealized picture at the same time I believe that no great figure in all history has been more misunderstood than John Hunter. Instead it will be my endeavor to tell you something of the man himself his discoveries his achievements his museum and the ideals animating his whole life.

In order to appreciate his works let us first draw aside the curtain of history and try to visualize medicine two hundred years ago when John Hunter appeared on the scene which he was destined to dominate. At that time medicine was in its swaddling clothes. Very little accuracy had been attained either in this science or in natural history or in any of their branches. In the colleges human anatomy and pathology were passed over in a few lectures and comparative anatomy was in an embryonic state. The microscope had not taken its place as an instrument of precision in diagnosing healthy or morbid structure. Surgery not entirely veaned from the barbers and taught as an appendage to anatomy was at its lowest ebb; medicine was if possible in a more precarious condition. England did not possess in those days even one medical college. There were in London a few private medical schools unworthy of the name. This in a word was the status when young Hunter arrived in the metropolis to begin his epochal labors and investigations which were to herald the dawn of a new day in surgical science.

Well may we pause for a moment to consider his ancestry, early life and environment. His father, who was nearly seventy at the time of John's birth, was descended from an old and sturdy Scottish family in Ayrshire; his mother was the daughter of the treasurer of Glasgow. He was the youngest of



John Hunter

ten children. He was perhaps entirely his father's child, a bit spoiled by a justly proud father and a loving mother. He was the favorite son, grew up impatient of restraint and given to illness and dissipation. He was full of games, somewhat rough

and boisterous outspoken impulsive and generous a good hater but withal a staunch and loyal friend

Although as a child he hated his school books he had an inquisitive mind He was deeply interested in all the living things he saw already collecting and comparing the many specimens he found on his frequent rambles in the woods He said When I was a boy I wanted to know all about the clouds and the grasses and why the leaves changed color in the autumn I watched the ants bees birds tadpoles and caddisworms I pestered people with questions about what nobody knew or cared anything about And to these apparently useless pursuits John devoted a great part of his boyhood days

When this ill educated unpolished unkempt youth arrived in London in 1748 at the immature age of twenty to begin his scientific career under the direction of his elder brother William the foremost anatomist of his time few if any would have been able to discover that hidden spark of genius that indomitable spirit of determination that was to make his name immortal It is impossible to estimate the value of the early influence of the elder on the younger brother Although only ten years his senior William was more like a father than a brother Beyond all doubt he was the architect of his younger brother's early success John admits the debt he owes to William in a letter written in 1762 when he states I am very much obliged to you for your introduction of me I think my name will live now as it is joined with yours

History will ever recognize William Hunter as a great anatomist It is conceded that his discovery of the lymphatic system after Harvey's discovery of the circulation ranks as the greatest achievement in physiology of all time He was a cultured and charming gentleman steeped in the best traditions of his profession He moved in the society of royalty litterateurs and artists was close to the king being appointed by him Physician Extraordinary to the Queen and numbered among his intimates Reynolds Gainsborough Hogarth and Samuel Johnson In sharp contrast to his distinguished brother John cared little for this society Surgery forever will be indebted to

William if only for the part he played in helping his brother find himself who at the same time lost himself in his deep love of science. One cannot help but wonder if William had not pointed out the way to anatomy in what other domain the supreme genius of John might have found expression.

It is interesting but sad that the subject anatomy which early fascinated and bound these two brothers in beautiful tie of comradeship and life-work was the force that actually separated and left them estranged until a partial reconciliation was effected at William's death-bed.

That work satisfies the soul is seen in the lives of both of the men. William writes in 1768 to Cullen: "My own affairs go on well. I am I believe one of the happiest of men. The great philosophical physician closed his beautiful and useful life with these words: 'If I had enough strength to hold a pen I could write how easy and how pleasant a thing it is to die.' Thus the curtain fell on the best teacher of anatomy of his time."

It should be remembered that John Hunter began his professional career subordinate to a cabinet-maker. To the profession for some time he was known only as a good anatomist. His brother as a great anatomist. One admirably appreciates that this was no small handicap to overcome by the youthful sandy-haired Scott's youth who left the firm after eleven days' journey on horse back and into London there to begin career of unparalleled industry of scientific investigation and a hundred scores which were to make him the first and foremost of the great metropolitan and the first surgeon of all England.

After eleven years his health began to fail and at the age of thirty-two he left London to become a army surgeon. To this end he received some new improvements in military surgery. In his remarks on gunnery and ballistics he lays down some fundamental principles often overlooked today and reveal the fact that he possessed the true accomplishment — a masterful intellect. When he emphasized the importance of not enlarging the ball but frequently laying them all on a level some thought necessary as to be so he proved himself

a master surgeon. How often have we all seen infected wounds which might have been clean ones had they not been probed by a meddling surgeon. Hunter said, "This is common surgery and ought to be military surgery." The significance of this axiom gains more importance when one realizes that it was contrary at that time to the advice of such masters as Ambrose Pare and Baron Percy. An experience in three European wars has convinced me of the soundness of Hunter's doctrine uttered one hundred and sixty-five years ago.

Even at this period of Hunter's career his relationship with his contemporaries was not very cordial as may be seen in a letter written to William from Bellisle in 1761 in which he wrote in part: "I have had the eyes of all the surgeons upon me both on account of my supposed knowledge and method of treatment. My fellow Creatures of the Hospital are a damned disagreeable set. The two Heads are as unfit for their employment as the devil was to reign in Heaven."

Petrucci came to London in 1763 after he had added to his great anatomic knowledge three valuable clinical years in military surgery. We find him settled in a home in Golden Square.

To the people around Golden Square—as Stephen Paget has written—he was a zealous student of the human body who might or might not restore you to health but would certainly wish to anatomize you if he failed. But it would not be fair to have one think he was a recluse at home only in a dissecting room with a cadaver and scalpel. No, he was not without his warmer side. It is said at this period that he was a companionable man, associated in company, drank his bottle, told his story and laughed with others.

He was now thirty-five years of age and beginning the most productive period of his life. We must no longer regard him as merely an anatomist or army surgeon but as a comparative anatomist, biologist, naturalist, physiologist, pathologist, an eminent teacher and above all in the fullest sense of the word a great surgeon.

Soon after he returned to London he organized his school of anatomy and started collecting and dissecting animals. He

William if only for the part he played in helping his young brother find himself who at the same time lost himself in his deep love of science. One cannot help but wonder if William had not pointed out the way in anatomy in what other domain the supreme genius of John Hunter had found expression.

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It should be remembered that John Hunter became a his professional career subordinate to a celebrated brother. The profession for some time he was known only as a good anatomist but both as a surgeon and anatomist. On readingly appreciates that there was a small hindrance to be overcome by the costly and hazardous Scott's journey who left the farm and after a long journey on horseback rode into London to begin a career of unparalleled industry. His scientific investigations and facts he gathered which were to make him the most sought after surgeon of the great metropolis and the first surgeon of all England.

After eleven strenuous years his health began to fail and at the age of thirty-two he left London to become an army surgeon. To this end there were so many improvements in military surgery. In his examination on gunshot wounds for example he laid down some fundamental principles of the wound which look today and reveal the fact that he possessed that far-advanced human intelligence—marvellous ability. When he emphasized the importance of not only the wound but the frequency of the lesion them long useful methods necessary to be developed he pointed himself

writes to him thus But let her go—never mind her I shall employ you with hedgehogs

That Hunter did not indulge in abstract theories and philosophical vagaries but wrested from nature her innermost secrets is evident in a letter written to Jenner who had offered a conjectural explanation of a phenomenon Hunter writes on August 2 1775 But why think? Why not try the experiment upon a hedgehog and it will give you the solution He was constantly trying to find ways to repay Jenner for all the trouble of collecting and sending him various specimens

Among the many things to admire in Hunter is the fact that he never took life or himself too seriously as witness the following note to Jenner written at the height of his fame after he had become a frequent sufferer from angina pectoris

January 1789

Dear Jenner I wish you joy it never rains but it pours Sooner than the brat should not be a Christian I will stand God father for I should be unhappy if the poor little thing should go to the devil because I would not stand God father I hope Mrs Jenner is well and that you will begin to look grave now you are a father

Yours sincerely

J Hunter

And these lines in another letter What are you about? I have not heard of you and from you for this long time you must be about some mischief that keeps you so quiet Let me know what you are doing or else I will blow you and have you brought to town as a criminal

At the age of forty five he deemed it necessary to become a public lecturer for two reasons first because he was so often misquoted and second because his discoveries were often referred to as the discoveries of others After he became active in writing he soon saw the advantages of placing his thoughts on paper He stated It resembles a tradesman taking stock without which he never knows either what he possesses or in what he is deficient

It is regrettable that John Hunter did not see the advantages

was deeply interested in every living thing. His mind must have been most of the time simply teeming with innumerable great and comprehensive ideas and generalizations which he was ever striving to correlate and interpret as nature's methods and law in his tireless efforts to relieve the sufferings of humanity.

He spared no expense or trouble to himself or his friends to obtain any kind of animal he desired. He was undoubtedly one of the greatest collectors every known and scoured the world through friends and messengers for the flora and fauna of all land. As soon as he had accumulated ten guineas he would purchase some addition to his collection of animal. Not infrequently he borrowed from his friend. Pray George he said to one of his good friends a book seller have you any money in your pocket. Have you five guineas—if you have and will lend it to me you'll go halves. Halves in what inquired his friend. Why halves in a magnificent tiger which is now down in Castle Street. His friend lent the money and John got the tiger.

None of his friends did he call upon more often to obtain specimens than his former favorite pupil and lifelong friend Edward Jenner. The warm friendship which existed throughout all the years between them is shown in many letters. Jenner was sensitive to the greatness of his master and often spoke of his indebtedness of purpose and warmth of heart. He prized his highly and carefully preserved all the letters from Hunter. Hunter's reward for Jenner can be epitomized in a few lines of a letter to him in 1792. I don't know anyone I would so soon write to as you. I do not know anybody I am so much obliged to. Then he gave him fatherly advice in the treatment of a patient about whom Jenner was ill. He lamented that all the hedgehogs that Jenner had sent him had died and he desisted from adding. I am belchables.

The importance hedgehogs have assumed in Hunter's estimation in comparison with other affairs to which his some men an emotional state perhaps are likely to get undue value emphasized in a letter of sound advice. I'll tell you the thing that Jenner who has suffered a long time that I'll tell you when he

room not infrequently with connoisseurs raconteurs and musicians. She added a cultural atmosphere to their home and her influence smoothed off the rough edges of Hunter's early uncouthness. She kept pace with him and in the midst of his greatest successes she was something more than the mirror of his life—she shone of herself. Many notable people were frequent guests in the Hunter home among whom were Madame Darblay Mrs Montagu and Lord Oxford. Mrs Hunter wrote *My Mother Bids Me Bind My Hair* which was set to music by Haydn and also the words for Haydn's *Creation*. After Hunter's death she published a volume of poems and composed that remarkable epitaph for his memorial tablet in St Martin's in the Field. She retained her wit and beauty to the end passing away in her seventy-ninth year.

One cannot help but have a feeling of sympathy for Mrs Hunter as her famous husband's museum specimens began to overflow the London home and it became necessary to build a large house at Earl's Court where most of his biologic researches were conducted. There he kept for purposes of study and experiment the fishes lizards blackbird hedgehogs and other animals sent him by Jenner tamed pheasants and partridges at least one eagle toads silkworms and other creatures obtained from every quarter of the globe. Here it became necessary to add more and more rooms for his ever increasing collection. The maintenance of this menage together with his other establishment required a retinue of fifty servants. It is little wonder therefore that his income allowed nothing for saving. This rambling old house must have appeared more like an old curiosity shop than a dwelling or even a scientific museum. Be that as it may it was the apple of Master John's eye. Frank Buckland the eminent naturalist observed John Hunter had as great horror of feminine interference in his studio as have many philosophers of today. One had only to be familiar with the cloisters leading through a subterranean passage to be able clearly to visualize the indefatigable John wheeling in a tidy sized cart or truck or dragging into his den anything from a giant's body to a good sized whale. Any of his pre-

a classical education would have given him his writings constantly reveal the handicap under which he labored all his life. The training would have given a finish to his work but would not have changed entirely the mental processes which he used so effectively in his monumental investigations. However his lack of a classical education afforded some of his contemporaries particularly Jesse Foot urged by jealousy an opportunity to thrust in here and there a word of carping criticism to which John replied Jesse Foot accuse me of not understanding in the dead languages but I could teach him that on the dead body which he never knew in a language dead or alive.

In Hunter's days in our day men were prone to write paper and books on subjects which they had not thoroughly mastered. Hunter's opinion for that sort of medical literature is well expressed in the following letter brought to him as a pupil and inquired what books his boy should read. Hunter replied by taking them into his dissection room and showing them the books and replying Sir these are the books your son will learn under my direction and others are fit for very little.

At this period we are seeing Hunter in the happiest time of his life the zenith of his career rapidly winning recognition. That his fame was not a glory reflected from his celebrated brother but was established early on his independent merit and native ability is attested by the fact that in 1764 he was elected a Fellow of the Royal Society which was three months before this honor was conferred upon William. That he was happy there can be no doubt. The joy of work and the satisfaction of accomplishment appear in his writings to his brothers in reference to his work he says It is nearly what I want beyond which I have no ambition. Then after mentioning his various experiments he concludes While all these concurrent circumstances go on I must continue to be one of the happiest men alive.

A great factor in the happiness of John Hunter was his fortunate marriage. She was fifteen years his junior — but a total harm on him filled her life.

He *discovered*—

- 1 The lacrimal ducts
- 2 Many features of the lymphatic system
- 3 The exact descent of the testes in the fetus
- 4 The part played by the olfactory nerve for the detection of smell and the fifth cranial nerve for sensation
- 5 How union of ruptured or severed tendons occur having ruptured his tendo achillis when dancing Then he performed tenotomies on dog thus laying the foundation of orthopedic surgery
- 6 That digestion is arrested in hibernating animals and draw the inference therefore that digestion is also arrested during the processes of inflammation in the human body He pointed out that feeding and stuffing patients at this time was contraindicated This great principle has often been overlooked and it remained for two great American surgeons of our day Murphy and Ochsner to emphasize this again in the treatment of acute appendicitis

He *studied and made able contributions*—

- 1 The transplantation of teeth in the human subject and upon skin grafting
- 2 The mode of growth of the long bones
- 3 The arterial supply of the gravid uterus
- 4 The prevention of rabies or hydrophobia and was one of the first surgeons to teach that debridement of the wounded structure was indicated
- 5 Shock phlebitis pyemia and intussusception inflammation gunshot wounds and the surgical disease of the vascular system
- 6 Head injuries particularly on fractures of the skull and trephining
- 7 Artificial feeding demonstrating for the first time how this could be accomplished by means of a flexible tube passed into the stomach
- 8 Artificial or forced methods of respiration inventing an apparatus for such

cious acquisitions found residence there without Mr Hunter's knowledge and as adds the humorous Buckland "I'll be bound to say she used occasionally to lead him a life and kick up a row if any preparation with an extra effluvium about it was left on the dissection table"

Hunter's collection numbered nearly fourteen thousand specimens. These were explained in ten volumes of manuscripts, notes, drawings and descriptions. He dissected more than five hundred different species of animals, many of them more than once, and left records of three hundred and fifteen dissections. This vast museum costing him over \$350,000 was bought by the Government after his death for \$150,000 and now forms the famous Hunterian Museum of the Royal College of Surgeons. I do not believe that the annals of medical history record any other man who, either before or since Hunter's time, has ever accomplished so much with his hand. For more than forty years he labored incessantly.

How it was possible for him to accomplish so much seems a mystery until one is acquainted with Hunter's personal habits. He is said to have arisen often at four o'clock and to have gone immediately to the dissection room where he worked until nine. Then a small breakfast, seeing patients in his home after ward hospital round until four, a nap for one hour, and then to his lecture or to his museum where he worked for hours. Not infrequently when his admiring faithful and loyal assistant William Clift left him at midnight he was trimming his lamp for further study. When a young student came down to London to enroll in his class and called on him one afternoon he gave him a few particulars concerning the work. He told him to return the next morning and he would put him further in the way of things. When the student asked what time he should be there Hunter replied, "as soon after four as you can." To his surprise when he arrived he found Hunter busily engaged in dissecting bones.

It is possible in a paper of this length to enumerate merely a few of the outstanding achievements of this dynamic character and assistant investigator and surgeon.

knowledge as he requests him to send more hedgehogs for experimentation

While he was progressive and enthusiastic in his ideas his confreres were in a large measure conservative and stolid. Encouragement he never received. Some of his contemporaries were indifferent to his doctrines others incited by the venomous trio of prejudice envy and jealousy were openly opposed to him. That he was thoroughly cognizant of all this was manifested when he said "The few good things I have been able to do have been accomplished with the greatest difficulty and encountered the greatest opposition. Unquestionably his doctrines were necessarily not those of his age while lesser minds around him were still dim with the mists of the ignorance and dogmatism of times past his lofty intellect was illumined by the dawn of a distant day. It is said he poked rather rough jokes at the pathologic dogmas held by some of his colleagues and gloried in the large group of physicians and students who followed him and not them. He must have been a bit of a pea fowl wearing his laurels with an aggressive air.

Due to the increasing frequency of the spasmodic attacks of an *ina pectoris* and to his lengthening years he was nevertheless compelled to endure the lash of professional jealousy. He realized that his life hung by a thread and said "My life is in the hands of any rascal who chooses to annoy and tease me. With many of his confreres still enslaved by the traditions of the past he was often impatient and even overbearing. Such a temperament as may well be imagined was not conducive to a particularly cordial relationship. Nothing is more certain to blind one's reason than jealousy. Many of Hunter's colleagues in London at that time could see no value in his discoveries or his marvelous collection. Envious of his superior intellect they grouped themselves and opposed all his efforts for the improvement of science.

An attack of *angina pectoris* was precipitated at last when one of his colleagues contradicted him at a Board Meeting of St. George Hospital while he was speaking in behalf of two students. His anger was instantly excited he struggled for a moment to

Space will permit no more than a mere mention of his observations on fetal smallpox on the efficacy of mercury in the treatment of syphilis on the differentiation between hard chancre and chancroid ulcer on the development of birds in eggs on superfetation electric fishes postmortem digestion of the stomach on regeneration and transplantation of tissues poisonin in animal and on the habits of bees hornets and wasps and on young bulls leopard and other ferocious animals

His four most important are—

The Natural History of the Human Teeth

A Treatise on the Venereal Disease

Observations on Certain Parts of the Animal Economy

A Treatise on the Blood Inflammation and Gunshot Wounds

His greatest innovation in surgery was the ligation and cure of a popliteal aneurysm by ligation of the femoral artery high up in what is aptly called Hunter's canal thereby introducing and establishing for all time a new principle in surgery which has saved thousands of limbs and lives and as P. Assalini an Italian surgeon who saw it first performed said "It excited the greatest wonder and awakened the attention of all surgeons of Europe." He had arrived at this principle by observation of and experimenting with the antlers of a deer in Richmond Park. Rohrer has stated that "this one feat of surgical daring novel alike for its resourcefulness and originality is in itself sufficient to give him undying fame."

Honors at this time began to pour in on Hunter from England Scotland and Ireland and indeed from all parts of the scientific world his years of ceaseless toil now bearing fruit in abundance. We must agree with Palm who states that of all who have attained to the highest rank in surgery none ever rose so entirely by the pure force of spirit and talent as John Hunter or was less indebted than he was to his success to the good will and assistance of his contemporaries. Living up to the last Hunter worked as if he expected to live always. One of his last letters to Jenner reads "I am uniquely blest that I

principles and law. The surgery of the Middle Ages was a trade. Ambrose Pare and Jean Louis Petit converted it into an art and John Hunter elevated it to the rank of a science. Hunter's permanent position in science is based upon the fact that he was the founder of experimental and surgical pathology and a pioneer in comparative physiology and experimental morphology. He has left to all succeeding generations a heritage of achievement and a legacy of wisdom and knowledge never equalled nor perhaps will it ever be excelled. His influence upon scientific medicine therefore after a lapse of almost two hundred years is still tremendous and inestimable.

Such was the life of this all embracing genius the like of which the world produces scarcely once in many centuries. We readily agree with his apt remark to Maxwell Garthshore who finding him one morning very occupied in his museum said "John you are always at work." To which the intrepid John replied "I am and when I am dead you will not soon meet another John Hunter."

His name will live forever enshrined not only in the hearts of all surgeons but in the hearts of all true scientists. He belongs to the Ages. Fortunate is it that Sir Joshua Reynolds has bequeathed us his portrait—the painting of an immortal by an immortal.

And even though time should dim the work of the painter there will remain the deathless tribute of the poet his wife who composed these beautiful verses as his epitaph

H t w f l l l d d t l l
O w h m m m p k f g f i d
W h s e h f t h g h t N t l l d f i l l
W h s e d p e s e h t h l f T r u t h p d

H t f y f t l d w t h f l c a
I f t h t l b o f p f l m d
T s o o t h t h l l h m t y m t h
D s e r v t h g r t f l p l d t f m k d —

T h b e h h m k b d h
E v y l d s e t d m m s o b g h t
T h s e p e c k h h t h b f d y p p e
T k t h g f m h m d l m l g h t

inhibit his passion tottered to an adjoining room and fell dead. Such a death was not an unfitting climax. He died as he had lived, serving his fellowman. Thus ended the dramatic career of one of the greatest investigators, scientists, and surgeon of all time. But as always time has worked its revenge. Those contemporaries who criticized him most have joined the great caravan of fading names while his fame increases with the age.

To appreciate fully the real inner man, to discern what were the fire of human kindness that burned within his breast, one has only to remember his loyalty to his friend, his fondness for animal, his self-sacrificing attention to and his utter frankness with his patients, his charity, his ever-ready response in a list of students or true-line practitioners—all the eloquently testify to the warmth and generous nature of the genius of whom our profession should always be proud.

As a great tree may be measured by the length of its shadow, so the greatness of John Hunter may be estimated by the famous surgeons who were his pupils and whom he developed. Well might he have been proud of such a distant following as Cline, Abernethy, Astley Cooper, Taes, Green, Bodie, Larance—each of whom played the respective role in the development of English surgery. That Hunter influenced us is an important factor in the development of early American surgery; the evidence can be no doubt.

Through his time and space he permitted an opportunity to enjoy only a portion of the magnitude and scope of John Hunter's life work. From the beginning of his scientific career to the end that he knew less an undertaking than the study of the phenomena of life, health, and disease throughout the whole of our animal bodies. At all times he has been interested in the truth of truth.

In the sense that he was constantly learning, the knowledge he was what one would call a popular. He introduced a new spirit—the method of progress. He pursued problems purely and objectively, without preconception. He found surgery a handicraft still saturated with the old magic and mysticism and carried it far to the realm of general

CLINIC OF DR. ANDREW STEWART LOBINGIER

GOOD SAMARITAN HOSPITAL

PERICHOLECYSTIC ADHESIONS

It would seem singular that in all the voluminous literature concerning disease of the gall bladder and ducts and especially the pathologic conditions associated with obstruction to the normal discharge of bile so little importance has been ascribed to the obstructive influence of omental adhesion.

It is rare that a seriously diseased gall bladder will be found without distortion from bands of omental attachment which are the result of a pericholecystic inflammation. These bands may occasionally arise from an extrinsic inflammation due to appendicitis or a septic kidney followed by peritonitis localized in the right side. But almost invariably there is evidence of a previous septic hepatitis and cholecystitis wherein the gastrohepatic and great omentum have formed adhesions to the gall bladder, duodenum and under surface of the liver frequently drawing the hepatic flexure and first portion of the transverse colon far from the zone of their normal excursion. We so frequently see the gall bladder partly or wholly covered in with such adhesions weighed down by a dragging transverse colon from the omental attachment that these adhesions have assumed in our mind a place of major importance in all operations in the right hypochondrium. Moreover we are strongly of the opinion that in at least 30 per cent. of these cases the need of a cholecystectomy will not appear when the gall bladder is freed and the omental attachments are broken up. When the liver is thin and edematous with a soft pliable feel and a normal color and the gall bladder wall is found to be thin and blue there can be no justification for further operative interference after the adhesions are broken



cystic duct and remove the gall bladder without draining the liver through the cystic duct is manifestly irrational surgery. This pathology may persist for years without a competent diagnosis being reached or the patient relieved of the distressing symptom complex marked chiefly by those digestive disturbances characterized by nausea, gas distention and colonic pains. These patients spend years in sanatoriums under treatment for indigestion and colitis and drift eventually into the absurd tyrannies of new paper dietitians.

I can recall no other abdominal pathology which contributes so much to the sum total of human wretchedness as these undiagnosed and improperly treated adhesions. It would appear that they remain unfamiliar to internists and many surgeons chiefly because they are not routinely looked for. It is so easy to think of cholecystitis and the various forms of colitis and to be governed in reaching this conclusion by the readings of a radiographic gastro intestinal group of films or of cholecystography. The revelations of the living pathology at the operating table show with graphic emphasis how misleading laboratory findings of all kind may be in these cases compared with the value of the clinical evidences revealed by a careful and critical bedside analysis. We have been led reluctantly to attach very little importance to the negative evidence found in the radiographic film in pericholecystic adhesions. In the majority of instances we go through with the study as a matter of routine but it rarely helps us.

Pain in the right side near the colon flexure is a cardinal and constant symptom.

Pyloric spasm from constriction or tugging at the first portion of the duodenum is a definite and frequent symptom.

Bloating, a sense of fulness after even a small meal is almost invariably present. Tenderness over Robson's point is constant in 85 per cent of our cases.

Constipation, a coated tongue and aversion for fatty foods are characteristic and important factors in the complex.

The treatment may be simple—to free the adhesions and turn in the raw surfaces. But how very extensive and time con-

up and the raw omental areas carefully turned in. Far too many such gall bladders have been removed. There is certainly no reason for imposing the hazard of a cholecystectomy with so little pathology in the liver and gall bladder to justify it.

A history of acute appendicitis or of pyonephrosis should lead one to suspect a possible extension to neighboring viscera. Cases are being reported in the literature of obstructive jaun-



Fig 40—P h l c y t d h l g g l l b l d d d o d m d
h pat fl k k t m l l m d p p e d

dice resulting from adhesions arising from appendiceal or renal infections while the infection is still active. As soon as the septic focus was destroyed or removed the abscess subsided.

We may find in many cases of adhesions about the gall bladder a peristing hepatitis with edema and granulation and associated with the condition a definite chronic cholecystitis with thickening of the gall bladder wall and a heavy inflammatory edema of the pancreas. In such a case it is the

CLINIC OF DRS W I TERRY H H SEARLS AND
R J MILLNER

FROM THE DEPARTMENT OF SURGERY OF THE UNIVERSITY OF
CALIFORNIA MEDICAL SCHOOL

**PRESERVATION OF THE PARATHYROIDS AND
RECURRENT NERVES BY A MODIFIED THYROIDECTOMY**

IN man four parathyroids are usually present although the number may occasionally be increased or decreased. Accessory fragments of parathyroid tissue are frequently present and may be found anywhere in the region of the thyroid or trachea.

The superior parathyroid are usually described as lying on the posterior surface of the thyroid near the junction of the upper and middle third of the lobes. They correspond approximately to the level of the lower border of the cricoid cartilage. The inferior parathyroid usually lie on the posterior surface of the thyroid near the posterior inferior margin of the lateral lobes. The normal location of the parathyroids is in the loose connective tissue immediately outside the thyroid capsule. Occasionally they lie in a split layer of thyroid capsule but it is always possible to lift them by blunt dissection and demonstrate their entire lack of connection with the thyroid gland tissue.

Variations from this typical arrangement are quite common. Studies in this clinic based on 612 thyroidectomies and 25 dissections of cadavers show that in approximately 30 per cent of cases one or more parathyroid are present on the lateral or anterior instead of the posterior capsule. Microscopic identification of parathyroid glands is so accurate and so positive as to exclude all doubt concerning the character of the tissue examined. In our series of abnormally located parathyroids the inferior outnumbered the superior approximately two to one.

sumin this procedure may be is obvious to anyone who has seen how extensive and complicated these adhesions often are.

The appendix may have been removed on a previous occasion. If so it is nevertheless important to examine the cecum and the terminal ileum. Often very obstructive kinks and adhesions may be found there. The region of the ileocecal valve cannot be ignored even when we are thinking intensely on what we shall find higher up about the gall bladder.

The ascending colon, the hepatic flexure and the first third of the transverse colon merit an equally critical inquiry. Rarely are the flexure and the transverse colon not involved in adhesions about the gall bladder.

After all adhesions about the gall bladder have been freed and the duodenum and cystic duct mobilized we have finally to determine by the condition of the liver and pancreas and the freedom with which the gall bladder empties and the degree of normality of its wall whether we shall leave it or remove the fundus and drain the liver through the cystic duct or do a complete cholecystectomy.

The surgeon who has proved himself qualified to make a correct diagnosis in this complicated pathology has learned well how to competently deal with the problems which will confront him in the operative room.

CLINIC OF DRS W I TERRA H H SLARLS AND R J MILLZNER

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We have found no correlation between the size or type of goiter and abnormal location of the parathyroid

The parathyroid have a definite blood supply which aids greatly in their recognition and identification. They always lie in close relation to the superior and inferior thyroid arteries and their larger anastomotic branches. The superior parathyroid on each side receives its blood supply from a superior parathyroid artery which arises as a short unbranched vessel from the lower portion of the superior thyroid artery or from one of the larger anastomotic branches between the superior and inferior thyroid arteries. Each inferior parathyroid is supplied by an inferior parathyroid artery derived from the inferior thyroid artery.

The most important function of the parathyroid gland has to do with the control of the concentration of calcium in the blood. Collip has been able to adjust the level of blood calcium at will by the administration of the active principle of the parathyroid gland—a substance which he has isolated and named parathormone. In parathyroidectomized animal a normal blood calcium a hypocalcemia or a hypercalcemia was effected at will by using varying amounts of the hormone; the blood calcium varied directly with the amount of parathormone administered.

Both hyper and hypocalcemia cause similar symptoms but it is the latter condition which is of chief interest to the thyroid surgeon. As the blood calcium drops below the normal content the clinical picture passes from the mild to the advanced forms of tetany. The mild forms are characterized by hyperexcitability of the peripheral motor nerves (best illustrated by the Chvostek-Erb and Trouseau signs) and a feeling of numbness and tingling in the extremities.

In the more severe cases muscle twitching appears. While in the advanced condition there are characteristic clawing of the fingers, the metacarpophalangeal joints and marked adduction of the thumbs (the so-called obstetric hand). The foot is often similarly affected.

The Chvostek sign is elicited by tapping the seventh nerve where it emerges from the parotid gland thereby diminishing

contractions of the facial muscles on that side. It is a sign of hyperexcitability of the seventh nerve and may frequently be found in apparently normal individual.

Trousseau's sign is obtained by circular compression of the arm at the level of the elbow. After several minutes the obstetrical hand appears.

Erb's sign is hyperexcitability of motor nerves to galvanism. It is an accurate and delicate test for tetany. The Trousseau is also accurate but less delicate. The Chvostek is quite delicate but not so accurate.

Patients suffering from hypoparathyroid tetany obtain relief when the blood calcium is restored to its proper level. This may be done in the mild cases by simple administration of calcium lactate carbonate or bismide by mouth (1 gm. t. i. d.) or the chloride intravenously (10 c.c. of the 5 per cent. solution once or twice daily). In the more severe cases parathormone (25 to 100 units daily) controls the symptoms readily. Frequent blood calcium determinations should be done to prevent the development of hypercalcemia.

Successful parathyroid transplant in the human have been occasionally reported in the literature. Halsted succeeded in transplanting them in animals.

Because of the occurrence of parathyroids on the lateral and anterior capsules of the thyroid gland (as noted above) many of these glandules are removed in the standard operation of subtotal thyroidectomy in which the surgeon plans to leave only the posterior portion of the capsule together with a small amount of thyroid tissue. Lahey observed the occurrence of parathyroids in removed tissue in operating for goiter and outlined a technic for their reimplantation at the table. Noting Lahey's findings a more careful examination of our material revealed a startling frequency of parathyroid in removed specimens of thyroid gland. In such instances the parathyroids generally lay on the lateral or anterior capsule of the thyroid in close association with a large vessel or near a branch of the superior thyroid artery at the very tip of the upper pole.

By modifying the resection so as to preserve lateral as well

as posterior capsule (Fig. 451) it has been found possible to save many parathyroids of the patients. A small amount of each superior pole is also left to further aid in their preservation. It is interesting to note that Dr. Halsted advised many years ago the preservation of somewhat similar portions of the thyroid gland and capsule in order to save the blood supply to the parathyroids. He had observed clinically fewer cases of tetany when these procedures were employed. Since these modifications have been effected parathyroids have only rarely been found in the removed tissue. Careful examination of the thyroid cap-

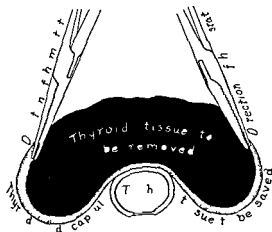


Fig. 451—Schematic plan of modified thyroidectomy

sule during operation may also reveal the characteristic glands and special measures can then be instituted for their protection. These changes also serve as additional protection to the recurrent laryngeal nerves.

To be of clinical value the recognition of normally located parathyroid must be gained in the operating room rather than in the pathologic laboratory. Nearly all of the normally placed parathyroids are saved by the above described modified technique. Those that are removed may be grafted while the specimen is still sterile and reimplanted at once.

The technique of search for removed parathyroid just

simple The specimen may be examined by the operator or one of his assistants The relation of the parathyroids to the branches of the superior and inferior thyroid arteries is of great assistance since it is usually only necessary to follow along these vessels and their larger branches

The parathyroids are oval bean shaped or flattened bodies They vary from 2 to 8 mm in length 2 to 4 mm in width and 1 to 3 mm in thickness They tend to be rather soft and in elastic The color varies from yellow or yellowish brown to a dark reddish brown depending on the degree of vascularity and the amount of fat present beneath the parathyroid capsule In fixed material they approach more of a chocolate tint In the fresh they may be somewhat translucent especially if small The presence of the relatively large parathyroid artery entering the hilum and the location in the loose connective tissue just outside the thyroid capsule usually make identification simple

The appearance and relations of the parathyroid are sufficiently characterized to identify them in most cases They must however be differentiated from other nodules which may lie in the same locations and closely simulate them Fragments of thyroid tissue cause the greatest difficulty These fragments may be small adenomas or small detached pieces of thyroid gland proper Thyroid tissue is pinker and frequently contains recognizable colloid It is also much firmer and more elastic In nearly every case it is possible to demonstrate its connection with the thyroid gland and it cannot be separated from the thyroid capsule without tearing this connection A definite artery is never seen

Small masses of fat may simulate parathyroids but are not encapsulated are softer and have characteristic color They also lack a definite artery Small lymph nodes are frequently confused with parathyroid They may even show a distinct hilar artery (This is especially prominent in hemolymph nodes) They may be differentiated by the gray color (grayish red in hemolymph nodes) and the much firmer consistency They are usually more opaque

Any parathyroid found on the removed specimen are at

once dissected free from the gland and placed in warm sterile Ringer's solution. During the closure of the wound a small pocket is formed in the belly of one of the sternomastoid muscles by blunt dissection. The parathyroid is inserted in this pocket and the edges approximated by interrupted sutures of No. 000 catgut.

Conclusions—1 The parathyroid plays a vital part in calcium metabolism in the body. Removal of one or more of them may lead to the development of very grave symptoms.

2 The frequent occurrence of parathyroid on the lateral and anterior capsule of the thyroid has been demonstrated.

3 A simple modification of the standard operation of subtotal thyroidectomy is offered in order to preclude any parathyroids which may lie on the lateral capsules and to act as an additional safeguard to the recurrent laryngeal nerve.

4 Specimens should be examined while still sterile and any parathyroid tissue found reimplanted.

CLINIC OF DR. EMMET RIXFORD

STANFORD HOSPITAL

LESIONS PRODUCED BY FORCED ABDUCTION OF THE SHOULDER

WHEN the limit of motion in any direction of a diarthrodial joint is reached the ligamentous apparatus of the side away from which the rotation takes place (side of the convexity) becomes taut and it furnishes tensile resistance to further motion in that direction.

Such tensile stresses developed as movement ceases under the laws of mechanics must be balanced by corresponding compressive stress which of course is furnished by contact of the bony surface of the joint.

If severe enough force is applied after the limit of normal motion is reached this balance is overcome and something must give way. Ligaments are torn or avulsed from their bony insertions producing sprain or if carried further dislocation or the bone may give way yielding to tension (common) or to compression (relatively rare).

Abduction at the shoulder joint with which we are now dealing is limited by tension of the inferior portions of the capsule balanced by pressure of the head of the humerus against the glenoid. At the same time the greater tuberosity of the humerus comes into contact with the upper portion of the cotyloid fibrocartilage (labrum glenoidale) which separates the tuberosity from the bony edge of the glenoid and which furnishes therefore an elastic cushion lessening the suddenness or shock of the impact but which is easily crushed. Pure abduction is thus limited at about 90 degrees (the horizontal position). On the

other hand if the arm be raised in the sagittal plane—a motion which I like to call extension—the greater tuberosity traverses an arc more or less parallel to the posterior edge of the glenoid the capsule at first becoming relaxed because of unwinding of the spiral direction of its fibers seen in the anatomical position also because of its laxity become tense and arrests elevation only after a rotation of 150 to 170 degrees is reached.

If the arm elevation of the humerus in the sagittal plane abduction be made to its limit the greater tuberosity impinges on the upper posterior edge of the glenoid limiting motion to both the abduction and extension.

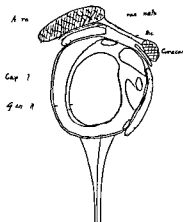


Fig. 4.—Complete view of the joint (1. T. t. t.)

Most abduction injuries of the shoulder are gotten by falling forward the hand and arm being thrown more or less forward in position the arm being in pronation. It follows then that the greater tuberosity in its most forward position results from the internal rotation. If now abduction occurs with a great or less degree of elevation in the sagittal plane the greater tuberosity strikes the edge of the glenoid somewhat behind its narrow upper portion.

It is the capsule filled by the tension of muscular fibers (hombod and long pectoral) with the fibers of the

balanced by compressive stress transmitted along the clavicle and severe abducting force continues, ligament or bone must give way. The principal lesions resulting from this single mechanism are briefly described below.

The distribution of the stresses of tension and compression in the structures about the shoulder joint when this joint is subjected to violent abduction may be gathered from the following diagram (Fig. 453) where compression is indicated by a plus sign (+) and tension by a minus sign (-). Of course the whole humerus and scapula are under stress, tensile on one side and

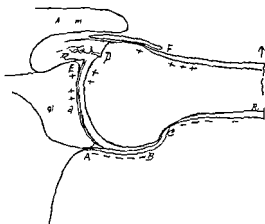


Fig. 453—Stress distribution about the shoulder joint. + = compression, - = tension.

compressive on the other and throughout the material of their interiors with a line somewhere in the interior where the two forces balance and the stress is zero. A diagram represents a simplification of the actual conditions for it goes without saying that one cannot in a diagram set forth all the stresses present even in any momentary phase of such a mobile mechanism. Moreover the distribution of forces varies with every variation in position of the elements of the joint.

The capsular ligament most frequently gives way at its lower portion B where tension is a maximum because of the curva-

ture of the head of the humerus and besides at this point the capsule is thinner. Sometimes the capsule is pulled away from the bone at *C* or *A* (avulsion).

LESIONS RESULTING FROM TENSION

1 If the abducting force ceases with a slight tear of the capsule the resulting lesion is a *sprain*.

2 If however the force continues and the capsule gives way the articular surface of the humerus is lifted off the glenoid by leverage about the point of contact of the greater tuberosity with the upper edge of the glenoid as a fulcrum. The head of the humerus is forced out through the rent in the capsule the lateral edges of which tend to make a straight line from *A* to *C*. If now even a slight blow be struck on the dorsum of the shaft of the humerus or if longitudinal thrust occurs as in fall on the hand or if simple abduction be continued until the dorsum of the humerus beyond the tuberosity impinge on the acromion or the coracoclavicular ligament the acromion or the ligament furnish a fulcrum and the head of the humerus is lifted off the glenoid and forced out through the rent in the capsule and *dislocated* results.

It is evident that tensile stress of the bone is a maximum at the points of attachment of the ligament—on the humerus at *C* on the scapula at *A*.

3 The humerus may yield to tensile stress in a fracture which starts at *C* on the distal side of the attachment of the capsule results in the common fracture of the surgical neck of the humerus (Fig. 454).

4 The scapula may yield to tensile stress at a point a little proximal to the point of attachment of the ligament at *A* result in fracture more or less complete of the neck of the scapula.

LESIONS RESULTING FROM COMPRESSION

If the ligament and their attachments are torn and the bone touches the bone may give way to compression.

5 In young subjects the compressive stresses applied by the capsule to the articular surface of the head of the humerus may

develop shearing stress to which the bone may give way along the epiphyseal line resulting in *epiphyseal separation*

6 At *D* by which the greater tuberosity is sheared off and displaced downward along the shaft of the humerus. The periosteum is not torn at the lower edge of the tuberosity but is stripped up from the shaft of the humerus—a matter for consideration in therapy.

Sometimes the shearing off of the greater tuberosity is followed by dislocation (Fig. 454) when the fracture of the tuberosity is commonly looked upon as a complication of the dislocation. It may also precede fracture of the surgical neck.

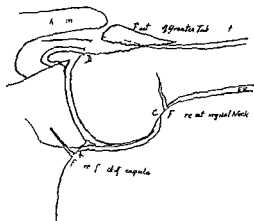


Fig. 454—Fracture of the capsule of the shoulder joint, fracture of the greater tuberosity, fracture of the surgical neck, and fracture of the humerus.

7 The upper edge of the glenoid may be damaged by the impact of the greater tuberosity and give way in a crushing fracture (rare).

8 Again in young subjects the humerus resting by its tough neck fracture by tension may give way on the opposite side by buckling under the compressive stress at *F* producing thereby a *buckle fracture of the surgical neck* which bears the same relation to the ordinary fracture of the surgical neck as does the buckling fracture of the radius to Colles' fracture (Fig. 455).

The lesions produced by forced motion as in abduction may of course be complicated by additional compression and tensile stress produced by axial rotation which would modify the location and direction of tension fractures and tear in the ligamentous apparatus

CLINIC OF DR. REYNOLD BROWN

COTTAGE HOSPITAL SANTA BARBARA CALIFORNIA

TUBAL TWIN PREGNANCY

THIS young married woman aged thirty two has an acute abdomen. She is a Hunarian and as neither she nor her family speak good English it is difficult to get a history. Doctors Henderon and Moffat who saw the patient first yesterday endeavored then to get her into the hospital. They made a tentative diagnosis of ruptured ectopic gestation from the acute violent onset of pelvic pain three weeks previously, the daily continuance of severe crampy pains and a mass in the pelvis. During last night the picture changed to that of an acute abdomen—rigid tender board like—vomiting and now a temperature of 103° F. She has just come into the hospital and we shall open the abdomen at once. Perhaps the trouble may not be ectopic but of infectious origin. However the patient's condition does not warrant further study. We are dealing with an acute surgical abdomen which is sufficient indication for exploration.

We find that the pelvis is filled with an enormous mass of clotted blood reaching well above the pelvic brim. The uterus, tubes and ovaries are embedded in the organizing blood clot. The omentum thickened by the infiltrating blood is spread over the blood mass and adherent to all parts of the pelvic walls and organs. On freeing the adhesions and turning up the omentum we are surprised to find in the center of the blood clot two fetuses. Each is completely formed of an age apparently two months and unattached to a placenta. The fetuses are removed and will be preserved.

Both fallopian tubes are now removed and the abdomen will

be closed. Let us examine the tube. The right one shows marked inflammation but no evidence of a pre-embryo having been present. The left tube is highly inflamed, greatly enlarged and thickened near the fimbriated end. The mucosal surface suggests that the ectopic pregnancy was pocketed near the fimbriae and that a tubal abortion, fetus, membranes and placenta had occurred through the fimbriated end.

There are not many records of tubal twin pregnancies. Aron in 1923 since which time there is little literature on the subject wrote that there were only 50 positively authenticated cases. Aron's studies in embryology led him however to state that tubal twins occur fifteen times more commonly than the uterine ratio. It is my conviction that scores of tubal twinnings are not recognized at operation. This is explainable because early rupture before the twin are grossly demonstrable are fairly common and because in many hospitals the relation between the surgical and pathological departments is not sufficiently intimate to make careful examination of removed tube and clots.

It is very generally accepted that the pathologic changes secondary to inflammation in a fallopian tube are responsible for the lodgment of the implanted ovum and its subsequent growth in the wall of the tube. The pathologic changes are very slight, are reduced in the lumen of the tube of infection which has usually completely healed. These changes act however as a definite obstruction to the passage of the migrating fertilized ovum. The fertilizing germ because of its small size and flagellated extremity had been able to pass the pathologic barrier.

The very complete knowledge of the character of tubal inflammation from the onset of the fertilizing process is all explained by deduction through the parallel in both multiple and nulliparae. It is a well known clinical observation that when a tubal pregnancy occurs either to the woman who has had children or who though married is yet childless, the usual interval between the last pregnancy and the next is never more than the expected case. This is the period of time that generally elapses before the lumen of the fallopian tube becomes

patent after the infections of the tube which terminate in recovery expend their forces. In multiparæ the infections are largely those of streptococcal or staphylococcal strain which enter through the traumata incident to childbirth or abortion. In nulliparæ the Neisserian organism is mainly responsible.

The pathologic basis for tubal gestation is very largely also responsible for twinning in the tube (Stockard and Mall). This applies to twins from a single ovum homologous or identical twins. Experiments and observations over many years in the embryologic field have yielded evidence which has permitted the formulation of a theory which though not yet proved is yet an interesting scientific approach to the understanding of the bearing problem of twins and various types of monstrosities.



Fig 456—Tubal

The theory is that the early critical moments in the developmental phases of the fecundated ovum during which are determined the origin of normal or abnormal beings or parts. In the conception homologous twins and abnormalities.

These critical moments are due not to hereditary influences but to environmental factors outside the egg. Normal or reduced oxygen supplies are all important. If oxygen environment be wholly adequate normality is assured whereas if there be retarded oxidation at one of the numerous stages of embryonic growth there is a developmental arrest or inhibition.

To explain the origin of twinning it is assumed that at the moment when a single primitive streak or embryonic axis is about to assert its dominance to evolve a single individual as is ap-

pa ently nature s purpose in human evolution there is a de creased oxygen supply which slow the normal developmental rate The single primitive streak lo es its position of advantage and there arises another (or more) primitive streak which competes with the other on equal terms If the streaks be eparated widely as they develop twins are the result

The residuum of pathology which delays the passage of the fertilized ovum throu h the tube and prevents implantation normally in the uterine mucosa also interfere with adequate oxygen supply to the growing egg The combination of delay continu d growth and deficient oxygen relations occurs not i frequently at the critical moment which favors twinning

Th pat t mad t rupt d ry d w good heal h

IMPACTED STONE IN LOWER URETER REMOVED BY INCISION THROUGH POSTERIOR BLADDER WALL

T pat t se ty y f g Sh w f d t h t
t m g by D W D S m f diagn f ec t se tt ck f
p th l ft l q d t f th bd m Th se p sa d t h
b g g t ry g t l f fi ya pa t d w p d d
p d f ft y by h d l th l ft l mb
g D S m h f h d th h d gn f th pat t
t m l d wh h hyp rt h ph t m t l
g g t t h t th t l t m py se f
th l g d m l t t — t co g g p t Th p t t t t
th t ght y g d t t k p t f h l ft k d y d t ld h
h h d t f h h h g m d

My associate Dr Irving Wills has cystoscoped this elderly woman and could hardly get a catheter past the left ureteral orifice. He did succeed in passing a filiform whale bone bougie to a point about 3 cm from the orifice where it met an obstruction. The filiform finally passed this obstruction and there was a gush of cloudy urine. A Ray pictures revealed stones in the kidney and a large bullet shaped stone in the lower ureter close to or in the walls of the bladder. Dr Wills has interpreted the joint cystoscopic ureteral and a ray finding as a stricture in the terminal ureter in the wall of the bladder and an impacted stone about 3 cm above the ureteral orifice (Fig 457 a).

Since these examinations were made I have seen the patient in a typical attack. It was truly agonizing and controlled only by large doses of morphine. Despite the risk of which the patient is conscious she asks that we try to give her relief. We are going to approach the stone through a suprapubic opening into the bladder. This we believe to be less dangerous than doing a nephrectomy and leaving the stone to cause probably continuance of pain and cystitis. Also we believe this bladder approach preferable to a suprapubic incision down to the peritoneum followed by extraperitoneal exposure of the ureter by

peritoneal displacement because of the possibility of a section of the cellular tissue back of the bladder from the infected urine

Dr Will believes the stone has been impacted and grown in size for several years producing a chronic interstitial ureteritis and periureteritis which has obliterated the cellular space between the bladder and the anterior ureteral wall. This would permit urine to enter the ureter without entering the cellular space

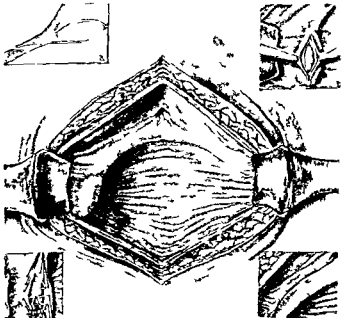


Fig. 4.—Transverse section of bladder and ureter. The bladder is impacted and the ureter is dilated. The catheter is inserted into the bladder.

The bladder is impacted. The stone is lifted up by pressure through the internal os of the ureter. The bladder is then incised and the stone is removed. The ureters are incised as shown in Fig. 4. The stone is then removed from each orifice. The stone is lifted out of the bladder.

Dr Wills suggests the ureter being strictured just inside the normal ureteral orifice that a new ureteral orifice be made. This we do as follows. A large ureteral catheter is passed into the ureter through the ureteral incision then through the bladder and out through the urethra. The opening in the anterior wall of the ureter and the posterior wall of the bladder are closed about the catheter (Fig. 457 c d). The suprapubic bladder wound is closed about a large tube.

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 m th l t d t g g ght t gth d f f m pa
 Sh t d t th h p t l w k h g h d f tw th d y
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 W l l y t coped h d f d pe g th t f th bl dd
 th l f th cy t t my ca f m wh h p d d t th bl dd h
 p m d th t l bd m l w ll Of g t t t t
 th ll t lt f th t l pe t th ls rvat th t pe od
 j t f l se m g f th pl t ly h l d ly nad
 t l fi ll p p b w d l t pe d d h g d d th
 pat t d d f t m

CLINIC OF DR THOMAS O BURGER

FROM THE SURGICAL CLINIC OF THOMAS O BURGER CLYDE J
O BORNE AND HALL G HOLDER SAN DIEGO CALIFORNIA

THE POOR GYNECOLOGIC RISK

UNFORTUNATELY many gynecologic cases coming to the surgeon for treatment are poor risks for any operative procedure. The many and varied pathologic conditions responsible for these cases are well known and generally recognized. In the face of urgent treatment in spite of prevailing condition, what are the factors of major importance in reducing mortality and morbidity? 1 Thorough general examination and correct diagnosis thereby eliminating contraindication to operation or errors in judgment for example avoidance of laparotomy in the active stages of infection in the genital tract.

2 Proper preoperative care which includes (a) rest (b) proper treatment of associated disease (c) maintenance of normal nutrition and water balance up to as near the time of operation as possible (d) psychologic management to reduce the emotional hazard (e) supportive measures to increase resistance particularly referring to the use of blood transfusion in the debilitated and anemic from loss of blood toxemia or sepsis.

3 Operation (a) Selection of the anesthetic. Will the risk from the particularly morbid condition plus the risk from the anesthetic be least with any form of inhalation anesthesia with associated varying degrees of metabolic upset or with spinal anesthesia in which sequelæ are nil? Spinal anesthesia properly administered and controlled is the anesthetic of choice in this type of case. In the proper conduct of these cases there need be no compromised psychic state. Food and fluid pre and postoperatively need not be materially curtailed and this com-

bined with the practical absence of ileus with this type of anesthetic is a great advantage to the poor risk. One of us recently reported a series of 151 gynecologic cases administered spinal anesthesia with no morbidity or mortality in which ephedrin was successfully used to prevent blood pressure fall. There was no postanesthetic sequelæ other than headache which occurred in only 19 per cent of cases and in only one lasted more than twenty-four hours. (b) Proper technique involves first standardization of methods second antisepsis concerning which mercurochrome in skin sterilization and intravaginal application pre and postoperative has been helpful in diminishing morbidity third elimination of wasted time fourth gentleness fifth judicious choice of operative procedures sixth thoroughness including absolute hemostasis seventh protection of uncontaminated area from infection eighth conservation of body heat. All of the above are important in preventing disastrous postoperative complications such as shock hemorrhage infection thrombosis and injury to surrounding vital regions. (c) The selective use of radium when indicated.

4 Postoperative care including (1) rest (2) posture (3) sufficient food and fluid.

CASE REPORTS

C I—Mrs T A E 45 years of age first time pregnant 9 months 9 days gestation. History of hypertension 5 years. Physical examination normal. Laboratory examination normal. Preoperative diagnosis: hypertensive disease. Anesthesia: spinal anesthesia. Operation: cesarean section. Postoperative course: unremarkable. Discharge: 48 hours postoperative. Complications: none. Pathologic findings: none.

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 fu d bl d ll 3 610 000 48 p t f m glob (D) The
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 d d p l th g 120 mg ca d l mb
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 O th dat f d sch g 11/30/27 th w nd h d h f d by p m r y
 th p t e t w f l g t m ly ll d th d bl d ll t t th
 t m 4 6 0 000 h m gl b 50 p t (D)
 P th l g po t h d th t ru t be th t f l g l g t d
 f b d

Comment—This case typifies the advantage of blood trans-
 fusion in preparation for operation in cases of secondary anemia
 due to the toxicity from uterine fibroids and secondarily the
 marked advantage of spinal anesthesia in preventing complica-
 tions postoperative in a poor risk.

C s II—M J M g d th ty tw yea e t d M y H p t l
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 be rt d t th se f th m t h g l d e t h
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 bl t ral t be l l m t t both p m pe lly th l ft
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 lymph y 3 pe t ph l pe t T t t d k o —
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 compl cat ga d t gth p dly d d h g d 1 /3/27 d
 h l d by primary ge ral d m h mp d

Comment—The patient could have been most ideally treated with small doses of radium ranging from 200 to 800 millicurie hours to check uterine bleeding but inasmuch as the case was one of charity the necessary expense for the radium could not be met and as the next most suitable treatment was removal of the uterus this was done under spinal anesthesia thereby avoiding the danger of any inhalation anesthetic and any pulmonary tuberculosis.

C III—Mrs A P forty y f g t d Scripps M m l
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 P t heal h good F m l h t r v mpo t t
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 pt f m ked t d m both l w q d f b d m d
 pel xam t m ked d r v d th p se f t m sse
 th d val g th f grapefru P lp h g
 ext m ly pa f l Laborat ry port U g blood co h
 mal l m t T t t d gn s—b l ral py salp n
 O April 23 1938 t l g p s—be m d t p l
 th ia Th pel th t f m dhes d po t
 th m al l m wa lm t m pl ly bs ru d b dh b d
 P t d sch ged /6/28 d h led b p r po
 perat m pl cat h

Comment—This case of bilateral pyosalpinx with multiple adhesion causing partial intestinal obstruction was most satisfactorily performed upon under general anesthesia. Because of the perfect relation both infected tubes were removed without rupture or contamination and the disease was eradicated. The total obstruction relieved with a minimum of trauma. The usual perfect coalescence was experienced.

C IV—M B W g th f d Sc pps M m l
 H p l Ap l 18 1938 h h f compl f m h f h pa

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 t l l g th hyp m
 P t h l th F r th pa t y pat t h d be d m h d d
 d rw ght w th so t d m k d l t d H d be d m l l
 t eat m t th t mp m t
 Phy l E t —Sh d g d l t f l m k l l y em
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 ly t call l l H d g t b t f r f i d g l t d Ch t Th
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 l th d f i t f t b H t eg t T l gh th th
 bd m l w l l th l g d t ru m y b d f i t l y p l p t d P l
 m t h t l g d t f th t f m th p g n y
 ry soft th r w se g t N m sc l g t
 Ray f th h t h th k f l th h l h d w th m y
 l f i d th d ph g n th ght de g l p p a t l y h g
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 p h w d of h o f i b t b l
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 pl t sc p g t Blood t h d bl od-c l l
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 95 polymo pl l 77 pe t mall lymph y t 13 p t l g
 lymphocyt 5 p t ph l l p t t t l 4 pe t
 Op t U d p l th g 0 mg ca se d
 l mb p th p t bo t d P t pe t co se P t t
 mp d p d l y ft mpty g f th t ru d th h gh b h d t
 d t d l d up p d l p t t mad t f l ry d
 h d h g d g g ght dl

Comment—This case was a poor risk because of her critical condition as a result of acidosis secondary to pernicious vomiting of pregnancy. This combined with her associated pulmonary involvement made spinal anesthesia the anesthesia of choice. Her deranged metabolic state was not made worse or complicated.

C V—M M H g f t y f t d M y H p t l
 4/24/28 th h f m pl t f l g w ght d t th f th pa t y
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 t d p l se m t h g
 P t health good F m l y h t ry mporta t
 Phy l E m t —Sh l ma k d l y m t d m h
 cally l l m k l l g d d l t f mal H l d eck g t pt f
 m f m m mb L g gat h t g t Abd m

\ gat pt f d l q dra t Pl xam t
 h d m k dly h pert ph d d d r f bl d
 bl ed g fgh t m t Th b d l g m t th d
 fl t d th t th r ld t b m i m d m pa ful
 Th f d f th ru palp t d l d po t
 L h y E —l g t Bl od t R d blood
 It 34 000 h t bl d-cell 1 000 h gl b 40 pe t (D)
 polym ph l 80 pe m ll lymphocyt p ce t l g
 l mphoc y ll pe t m ph l gv f d ll d ll th t f sec d r
 m B p f m r h d p d m d m
 Op t L d p f th 0 mg se d
 l mb p rrv d l t d d d m t d m r d g g 3000 m ll
 h d bleed h k d

Comm nt—Thi i ti nt ll r ce e the balan e of her
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The alue of dium a g nst n t p of perat e pr
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CLINIC OF DR. HALL G. HOLDER

FROM THE SURGICAL CLINIC OF THOMAS O. BURGER, CLYDE J. O'BORNE, AND HALL C. HOLDER, SAN DIEGO, CALIFORNIA

MCARTHUR HERNIORRHAPHY

OPERATIVE procedures employed at the present time for the cure of inguinal hernia are far from satisfactory. This is true of the simple indirect inguinal hernia and increasingly so of the direct sliding and recurrent inguinal hernias. Supportive evidence for this statement may be found in the high percentage of recurrences at the hands of the best operators in the best hos-

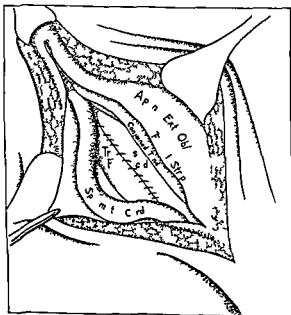


Fig 458—Show the following: N t tl f f sc l t p
t be t f m l e d f t l b l q po

pital and clinics. Further evidence against the efficiency of present recognized procedure are the many different modifications advocated in recent years.

The importance as regards satisfactory end result of habilitation of the sac and perfect wound healing need not be considered. Reconstruction of the abdominal wall need more thought. Academic points such as obliquity of the incision

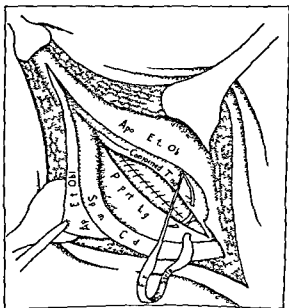


Fig 49—App mat f co j ed d t P part l gam t h cut
fascial t b oad ped l base inf c g k po l gl

canal valve like action of its wall & position of the cord may be disregarded. The importance of the retention of the transversalis fascia as advocated by Pittman and the whole process is one of the most important steps in the repair. But unfortunately in those cases in which it is most important to obtain a repair of the fascia it either cannot be demonstrated or is so attenuated as to be of little value.

Regarding the difference of opinion whether muscle will

unite with fascia—what is the simplest and most efficient plastic operation on the inguinal canal? Because of the nature of conditions in direct inguinal hernias recurrent or even simple indirect inguinal hernias in the obese or those with attenuated musculature where normal relations are altered it is logical that some type of fascial suture repair would maintain more substantial contact between structures if employed

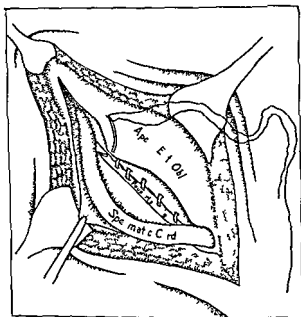


Fig. 460.—Fascial suture repair of indirect inguinal hernia. P. p. t. l. g. m. t. m. p. l. t. d. B. g. g. f. p. p. mat. f. m. l. l. f. f. t. m. l. b. l. q. p. o. t. g. l. l. g. m. t.

One of three methods are open to choice (1) The method of E. Wyllys Andrews (2) the use of living sutures according to the method of Gallie or (3) living sutures and repair as advocated by McArthur. Using the method of Andrews consists in sewing the mesial flap of the external oblique aponeurosis to Cooper's ligament and then imbricating the lower flap over this suture line. This method I use routinely on simple indirect

ternal oblique aponeurosis leaving a pedicle base for blood supply. By means of a special instrument or needle the strip is used to approximate the conjoined tendon to Poupart's ligament. The broad pedicle base of the flap supports the lower end of the closure at the weak spot. McArthur used a second fascial strip from the outer flap of the external oblique to unite this with the inner flap. To me this has seemed unnecessary in view of the perfect union of fascia when cleaned of all areolar tissue. Occasionally I use a second strip of fascia from the lateral flap to reinforce the primary line of suture if the first fascial suture is insufficient. The external oblique fascia is then approximated with continuous or interrupted No. 2 chromic catgut sutures. Overlapping is practiced if this is possible without tension. The mesial leaf of the aponeurosis is sutured to Poupart's and the lateral leaf placed over this line of suture thereby obtaining the advantage of an additional layer in the repair. The cord is transplanted in all cases.

CASE REPORTS

C. I.—F. W. m. l. g. ty. t. y. dm. tt. d. t. h. p. t. l. M. h.
 24 19 6 pe. t. l. M. h. 9 19 6 d. h. g. l. Ap. l. 12 19 6
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 pt. wh. h. h. d. b. th. d. h. f. y.
Ph. l. F. m. t. —E. t. lly. g. t. l. t. f. local. d. t.
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d y R pa sold pat t f l ll dh compl t

F llow p \ t —At th d f y th p f m b th
d th pat t h h d t f ympt d pl t lat
t h h lth gh h ll mpl f f q cy f t

C V—H H m l g fifty yea dm tt d M y 4 19 6 pe t d
M y 7 1926 d sch g d M y 20 19 6

P t III —I t t h h l t bl pt f th p t ght
m tl W lk g l ft g t ca lght p th
gh gu l g

Ph l E m t —N gat b t f th loc l d t wh h
l m d d h t th ght gu l g t g
th palpat f th p ga t t ry l t l t th eck f th sa Th
t l f t l g l gs ma k dl l g d

Op t —P th l g f d g Th th ght d d
gu l t g mall t t d dh t m t m Th
d l d th m sc l t f f q l ty

I oc d Th t d ta l d d C se l

D h g \ t —All t th se h post pe t l y Th

d bl m t f dh t m t m d l f m ll t t which
w ly d bl Th sa wa t dh tt th d th d m l
d th m sc lat f

P d Th t d tal d d C I

D k g A t —U t f l rs w d h l g by p mary

t t h m d th p t p t d y p t t d ch g d fift th
po t pe t d y th compl t R p l d

F llow p A t —Th pat t w f ll d f ly m th b t

t th d f th t t m pa w l d w th t d f

C IV—A H m l g fifty ye dm tt d F b ry 8 19 6
pe t d F bru ry 26 19 6 dsch g d M r h 15 1926

P t Ill —P t t dm tt d t g t ry d th h f

mpl t f f eq cy f t h h w f d t be co d ry t

ld t t f th po t th d h y t t Aft t tm t

f th t t h h d t h h bl t l pt t t d Th h

th ght w ca sed by th t g so t d w th m t t Of l t

h h d y g b g d t b th g wh l t d g

P t H t y—M t d pe t 1918 typh d 189

Phy l E m t —E m t by th g t ry d

ld f d b t d b R t l bo t y t t l d g bl d

h ty mal P t t p t d bl at l d t h at

both g l g se th l ft

Op t —P th l g f d g Th w both d d t

gu l sa wh h dh tt th l g t t O t l

l ft d sa t d m t m d l p f mall t t Th d

m l d th m l t f good q l ty

P oc d Th t d sc bed d Ca I

D k g A t —P t t y t f l w d h l d by p

mary t t th p t p t d y t f b d th f tee th

d y R p sol d p t t feel ll dh mpl t

F llor p V t —At th d f y th pa fi m b th

l th pat th h d t f y m pt m d mpl t l t

t h h l th gh h t ll mpl f f q y f t

C V—H H m l g fifty y dm tt d M y 4 19 6 p rat d
M y 7 1926 l sch g d M y 0 1926

I t Ill —P t t h h d t bl pt f th p t ght

tl W lk g l ft g t se ca lght p th

gh gu t g

Phy l E m t —\ gat b t f th l l d t h h

l m d t dh t th ght gu l g t g

th palpa f th p g t t ry l l t th k f th Th

t l d t l gu l g ma k d ly l g d

Op t —P th l g f d g Th th ght d d t

gu l t g mall test d dh t m t m Th

d l l th m sc l t f f q l ty

I oc ed Th t d l l d Case I

D k g \ i —All t t th th po t pe t l y Th

a t t h fect t t h l g l d d g p ted d sru
 d h g d d l y g m p l t t l f i t t h p o p e a t d Dis-
 h g d t h f m p f l l l l m p l t l f f l l y m p t o m s
F l l o r p \ t - f g h t m t h f t p e t t h h d b e
 m p l t

C VI—L J m a l g t h t y l t d S e p t m b e 8 10 6
 p e t d S e p t m b 12 1926 l s c h g l s p t m b e 26 19 6
P t Ill —R p t g h t l f t h p t f y t h l l g
 t t m c a g d s c m f t R l l t h s e t r u d s e t
Ph l E m t —N g t l f p s e f l g e s c r t l h
 l d t s a t h g h l
O p e t —P h l g f l g T h t h g h t d l r g e
 d t s a d g t h s c t m f t h t d g p o r t l
 d h n t m l l f m l l t t T h s a d h t t h
 d h h m a l r y h p e t T h m s c l t a g o o d
 P o c e d S a m d l l l C s e l
D h g \ t —T h p a t t m d t f l l s c e T h
 d h l e d b y j u a r y l l t b e g m e d t h s e h p o
 p e t e d y t h p a t p d h t h g h t h d y R p a f u
 p l
F l l o r p \ t e —P t t x a m l f t m t h f t p e o n
 t h d f \ p l t

C VII A h l f t y y l m t e d S e p m b e 6
 19 6 p e t e d S e p m b e 8 19 6 d s c h g d S e p t m l 1926
P t Ill —P t t l k d g h y l f t g f i t t e d
 l l g t h l f g f i m h g T h h d b e d l g
 O g h g t g t f q l t h f g F
 p t m h h h d f t m l t h s o d l t
 t p a t d d u a h T f l
Phy l E m t —C l p h y c l m l d g l b o
 t r y d y h k l l d t h g b t h l l d E x a m
 t f t h l f t g l g h l g d t h t
O p t —P t h l g f d g O h l f f h l g d
 s a t g u a l l t d m T l d m l d h
 n u s c l f g d q l t y
 P d b m l t l d C s e l
D h g \ —P t l f l W d h l e d
 h p m a r y l l m l h p o l d d h g d
 h o v e f u r t h p o p e d y f l g l l O g p a f i m
F l l o r p \ t —E m g h m h f p h
 d f e c C m p l l l l m g m p m

C VIII—J J l g t h y g h y d m t d O b e 2
 19 p e e d O b e 4 19 6 d h g l O b e 19 19 6
P n l Ill —F h p a t l y p a h b e b o h d w h
 r u p t h l l d P t o c p a l h v y l f g d f

l t p t f th p p o t f t h l d d b l p a d d
 m f t p l l y t g F th p t y b t t c t p t
 h p p e a d f th f i t t m t t g l l y l t
 P t H l t h — A l y g o o d h h d y l l
 P h y l E m f — W l l d l p d d d l g l m l l l t w t h
 g t f i d g p t f th l o c a l d t l t h l f t g l g
 t h p m t h t w h h t g Th
 f p g t r t p a l p a t d l t l t t h k f t h h l
 Th t l d t l g l g m k d l y d t t d I m p
 l f t d t g l h
 O p e t — l t h l g f i d g O t h l f t d t h w d t s a
 t h b s e t p t d l t l l t h b e g p l d b y t h g m d
 l Th g m d d b l y d l t d d m p l t l y f i l l d t h
 Th s a t l h t t g u t d t h d g t r a t Th
 t m a l d t h m l t f g d q l t y Th d t p
 s e t t h s o c l l d l d g h
 P d Th t d m l w l l f t h w m l d
 t h p t l d f t l d R p t h d d t l d C l
 D l g \ l — P t t l s c t f l t h w d
 h l d b y p m a r v t h t l l t w m d t h t h p t
 p e t d y d t h p t t l s c h g d h m t h f r t t h p o t p e t
 d y R l a l d w t h m p t m m p l t
 F l l w p h f — P t t t t l f t h p t f t n m t h
 N d f t f y m p t m t p a t m h m
 p d

Summary and Conclusions—A total of 10 McArthur herniorrhaphies were done on 8 patients. Among this number were 5 cases of direct inguinal hernia. 2 presenting bilateral involvement. One patient had a direct sac in which the posterior and lateral peritoneal wall were represented by dilated sigmoid colons a so called sliding hernia. Two large indirect inguinal hernias with scrotal sacs complete the series.

It is justly recognized that the above type of inguinal hernia represent the most difficult in which to obtain satisfactory results.

A modified McArthur herniorrhaphy technic was employed in each instance. Definite cure was obtained in every case as shown by follow up observations one to two years after operation.

This technically simple fascial suture procedure applicable to a wide range of difficult hernias merits more consideration than heretofore it has obtained.

CLINIC OF DR CLYDE J OSBORNE

FROM THE SURGICAL CLINIC OF THOMAS O BURGER CLYDE J
OSBORNE AND HALL G HOLDER SAN DIEGO CALIFORNIA

CARCINOMA OF THE SIGMOID COLON REPORT OF A CASE WITH TREATMENT

J R mal m tpa k ty y f g t dth M yH pt l
M y 11 1927 E pt f mpl t f h o h d s t y p t
d wh h f h t d t h path lth good C
t p t h h f mpl t f th p ty g ty nd
f th p th m th h d b t m att m s lt t g th d
h D gth t m d f t o h b pa f l d f m d tool bb n
lk h t Th w so t d mpl t f l t d l la h
d pa d th l gs th 2 po d l f ght

Physical examination showed an apparently well nourished elderly male not acutely ill. The cardiovascular system was well within normal limits. The chest presented no positive findings. Careful abdominal examination evidenced no palpable tumors or areas of tenderness. A definite right indirect inguinal hernia and moderately enlarged soft and symmetric prostate were palpated. The 18 inch sigmoidoscope was passed with difficulty due to a severe irritation of the rectum as a result of frequent enemata but nothing except this condition and a very much dilated rectum was visualized.

Laboratory examinations showed the urine to be normal the blood count showed red blood cells 4 490 000 white blood cell 5000 hemoglobin 80 per cent differential count being normal. The Wassermann was negative. X Ray examination with the barium enema showed a point of definite obstruction with marked filling defect at the sigmoid flexure. Barium given for a gastrointestinal series eight days before remained in the descending colon in spite of frequent cathartics.

In view of the clinical and x-ray findings a diagnosis of malignancy of the sigmoid colon was made and operation advised.

Operative Procedure—Operation May 17, 1937. General condition of the patient good. Temperature 98 F, pulse 80, respirations 20. Under ether anesthesia a 6 inch lower left paramedian incision was made. The liver did not show any lesions.



Fig. 46.—Bowel removed before operation. The filling of the sigmoid colon is shown.

of metastasis were found palpable in the patient's group of retroperitoneal nodes. To eliminate doubt we palpated the mesenteric nodes. The second group of lymphatic nodes were palpable in the mesenteric nodes. The growth occupied the lumen of the sigmoid colon and the mesentery. The growth in the mesentery produced obstruction to the passage of the contents of the sigmoid colon.

scarcely admitting the finger tip. The pelvic colon was not adherent to the posterior pelvic wall or coils of small intestine. The sigmoid proximal to the growth was considerably dilated with slightly thickened walls.

It was noted that the growth could be removed including a sufficient amount of normal sigmoid above and below without



Fig 463—B

m t k y f l l g p N t l
l n t t h l t

interrupting the blood supply of the upper rectum. In view of this the sigmoid arteries with the upper marginal branch were ligated with the idea of excising the sigmoid sufficiently on both sides of the growth. The lower third of the descending colon and sigmoid were mobilized in the usual way. Having thus effected

No. 2 chromic catgut suture passed through all coats of the proximal loop. Traction on the rectal tube protruding from the anus was now made sufficient to allow the proximal cut end of sigmoid to be drawn within the distal segment producing an intussusception for a distance of 1.5 to 2 cm. To effect an anastomosis a double row of interrupted No. 0 chromic catgut

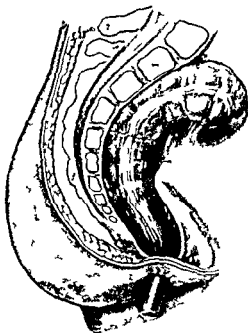


Fig. 465—Sigmoid colon, intussusception, and rectum. (M. H. Abdominal Operation, 4th ed.)

sutures were placed with less difficulty than anticipated. All raw areas remaining after mobilizing the colon and the cut ends of the mesocolon were carefully covered. The present omentum was then brought down and sutured completely around the site of anastomosis. Abdomen drained with Penrose tubing above the site of anastomosis.

Pathologic Report—The specimen represents about 8 inches

of the sigmoid colon contained in the midportion a firm indurated mass measuring 4 inches in diameter. The gut proximal and distal to the growth markedly dilated. On section the neoplasm of homogeneous consistency produced an annular constriction of the lumen so that a lead pencil can with difficulty be introduced. Microscopic section shows the characteristic structure of adenocarcinoma.

Convalescence was uneventful. The fluid balance was carefully maintained the first postoperative day. The abdominal drain was completely removed the seventh postoperative day. The rectal tube on the ninth. The patient was discharged the fifteenth day postoperatively with completely healed wound, feeling well and having regular bowel movements without discomfort and eating a high calorie low residue diet without difficulty. During the past year the patient has gained 40 pounds in weight, feels very well and is now unlimited diet. The bowel are regular without catharsis. On May 20, 1958, one year after operation, barium enema showed the rectum and colon to be regular in outline and without evidence of infiltration. The lumen was of normal size and without evidence of structure.

Comments—This case presented to the all comparative simple osteopertinent within the most physiologic end result. It is realized that it is only applicable in that percentage of cases occurring in the sigmoid colon that may be freely mobilized where because of slow contraction the enterolith has not been entirely impacted. If available evidence can usually be accomplished without erroneous postoperative tamponade. The induration distal to the ileocecal junction during operation and the relief of the ileocecal junction for firm anastomosis. Postoperatively the tube favors the utilization by the abdominal cavity and permits of safe irrigation. An appropriate procedure which eliminates the usual difficulties incident to a rectal anastomosis but the patient

CLINIC OF DR. S. L. CALDBICK

EVERETT CLINIC EVERETT WASHINGTON

TWO CASES OF VISCERAL FISTULA TREATED WITHOUT SECONDARY OPERATION

C I—R C Am ca t k d g th ty yea dm tt d
t th h pt l N mbe 3 19 7 m g y H h d h d l tl
so t m h f se l m th l t h d g t tt t T h
b f dm h h d dd tt k f k f k p th ppe
bd m mpa db mpt m f e h k H se th m
l se t t t th h pt l
Th f mly l t y s po ta t
H h d th l t f t f h l dh l ! ph t my 19 3

Examination showed a fairly well developed and nourished adult white male who exhibited all of the cardinal signs of severe shock.

The head and neck were normal. The heart was well within normal limits and regular and the lung fields were clear. The abdomen was scaphoid and showed board like rigidity throughout. Tenderness was everywhere extreme but particularly marked in the upper quadrants. None of the viscera were palpable and no tumor mass could be made out. There was a well healed surgical scar in the right loin. There were no other important physical findings. The urine showed a trace of albumin and a few broken hyaline casts. The leukocyte count was 14,000 with 81 per cent. of polymorphonuclears.

The diagnosis of a perforated peptic ulcer was made and the abdomen opened under ether anesthesia. A perforation through a large indurated ulcer on the anterior wall of the stomach near the pylorus was easily demonstrated. The ulcer was excised after the manner of Judd and the wound closed in three layers. The gall bladder and appendix which were also chronically diseased and very adherent to surrounding structures were removed.

in the usual manner and one Penrose drain was inserted at the site of the gall bladder. During the operation he received 2000 c.c. of physiologic saline by subpectoral infusion and he was returned to his room in better condition than when he was taken to the operating room. From the first he was a very difficult patient to control. Forbidden fluids by mouth he drained the contents of his ice cap the night after operation and on the fourth postoperative day eluded his nurse crossed the hall to the lavatory and drank a large quantity of water which was shortly afterwards discharged through the abdominal wound. During the following eight days everything was withheld by mouth. He was given 1000 c.c. of 10 per cent glucose solution intravenously twice daily and 2000 c.c. of physiologic saline by subpectoral infusion once each day. His condition remained satisfactory and on the twelfth postoperative day small feeds at two hour intervals were instituted. These were gradually increased until the twenty-fifth day when he received a small soft diet. He was discharged on the thirtieth day in excellent condition with the wound completely healed.

C H—A M h Am ca h g ty se E
 t d th h p l J 13 19 6 h mpla f pg d ss
 f t th d t Th pa h d l t meal t h
 t g f p rt l t l f food l h gh h h d t ca
 f l t l bef pa tak g f som m A p ly h
 h d tt k f se pg pa l g f h d f ll d by
 som j d l th m h b f m g h h p l h h d l t
 b 15 po d gh h d ed pe ll t g t th k
 d h d b b h d b pru Th h d b ta l da k
 th mal d th tool lgh l d
 Th f m ly h t ry mpo
 H h l ypl df t h g f \ h se ll ss d
 pe t

Examination showed needlely white m m what under weight and manifestly ill. The skin and claws were definitely ectopic.

The head and neck showed nothing of importance. The heart was silent although the lungs felt empty.
 The abdomen with the soft wall

The liver edge was palpated 2 fingerbreadths below the costal margin and the spleen was not felt.

There was considerable tenderness on pressure over the gall bladder and about McBurney point but no definite tumor mass could be made out. There were no other significant physical findings. The laboratory examinations were unimportant except for trace of bile in the urine. The blood Wassermann was negative.

x Rays of the gall bladder area twelve hours after ingestion of the dye were negative.

Based upon the history and physical finding in this case the diagnosis of chronic cholecystitis with cholelithiasis and stone in the common duct was made and on June 16th abdominal section was performed. On opening the abdomen a firm irregular mass was felt in the gall bladder area which upon separation of many adhesions between the gall bladder and surrounding viscera was found to be the common duct filled with stones. The gall bladder itself was shrunken, thick walled and contained very little bile. The stomach and duodenum were normal except where adherent. The common duct was incised and one stone the size of a small egg and many smaller stones were removed. The common duct was closed in two layers and the gall bladder drained in the usual manner. A small perforation in the duodenum resulting from the separation of adhesions was closed with a purse string suture and a cigarette drain inserted in that area. The patient was returned to the ward in good condition. His convalescence for two days was uneventful. On the third postoperative day there was a profuse discharge of fecal matter and undigested food through the incision. Pectoral alimentation, daily intravenous infusions of 10 per cent glucose solution and subpectoral infusions of physiologic saline were undertaken as supportive measures. On the fifteenth postoperative day he was allowed a liquid diet and on the twentieth day a light diet. He was discharged by wheel chair on the thirty fifth day after operation in excellent condition. A small amount of bile was still draining from the wound but there was no discharge of intestinal contents.

Comment—I present these 2 cases of visceral fistulae in order to emphasize the importance and the entire practicability of conservative treatment in cases of this sort. In neither case did the patient's condition justify a secondary operation and it is my belief that such a procedure would surely have resulted fatally. The ease with which intravenous nutrition may be carried out and the entirely satisfactory results obtained through its use should certainly commend it to the attention of every conservative surgeon.

Both of the patients have been seen frequently since leaving the hospital and at the present writing remain quite well.

TWO CASES OF PERSISTENT OMPHALOMESENTERIC DUCT

C I—B by W g ght l y h t m l f t f h lthy
 Pa t g B th ght 9 po d 9 I se t ght 9 po d N
 mal b th f m g o y g p mp Th mbl l d p t d
 th f th d y ft l th d th fifth d y th w p f d ch g
 f f l m t l th gh th mbl lth gh th b l h d m d
 t lly th p d F ll g th th ho l
 t d t po th t t l t m d ly th gh th mbl al f t l
 m g b t l t l by ect m F l f th h l d t g ght lth gh
 th m th h d b d f m l k t t d g cal m t l se
 th pers t t mph l m se t d t h h too l g l be f
 l h t t g m th d t t

Operation was performed under ether anesthesia. The umbilicus was carefully disinfectd and walled off with drapes. An incision 1 inches long was made laterally to it and the rectus fibers retracted laterally. On opening the peritoneum a duct 1 inches long and $\frac{1}{2}$ inch in diameter connecting the ileum with the umbilicus was disclosed. It was ligated close to the bowel and at a point about 1 cm distally and divided by cautery. The stump was inverted by a purse string suture and the abdomen closed in layers. The wound was sealed with collodion. The umbilicus was then exposed and with a small Kelly forceps the duct was caught and everted in the manner of turning out a glove finger ligated and trimmed off. A small dressing was applied.

The child made an uneventful convalescence. Food was withheld for twenty-four hours, the child being then returned to the breast. The bowels moved daily without aid. The infant was taken from the hospital five days later in excellent condition with the wound clean and fairly well healed.

C II—M A M h t Am h se f g th t y t y
 red th h p t l M h 4 1928 th mpl t f ec rr g tt k f
 pa h l bd m Th f t tt k rr g f rt y rs bef
 h d bee diagn d t ppe d t d th ppe d h d b m d

A m l t k i m th t t i th f l i t
 al f th t so th Th p l w y local d th lo er
 l j m th ght d d f l l k h ac soc t
 th m g j l t g f m th t t i h
 Th p t p e so l h r v a d th f m l y h t t m p o r t a E
 m t h l th p o o l d l p e j d p o o l y h d d l t h
 f m a l t t l l Th h j j l k m a l Th heart h e d
 l g m t g l t y j th l l e a Th b d o m w a s
 s c i h j h th soft l l N f th s c p a l p a b l d
 d f t t m m a s s e l d b e m a d t Th w t d m e s s h
 m s c f p m h l b f m p e a l l y th ght j Th
 g o r y t m l m l
 I b o t r y x a m t f th l l o d d h l b o h t o b e
 m a l Th f l o o d W m g t
 G t o t e s t l f t b m m l h e d b m a l
 I f th h t r y j t l b f t b d m a l p a t h l m
 d m t b l b d g f p o t f d h p d g
 p r t u a l t t l b f h p p d i t th M e c k l d
 l m m b e l o o k d f) m a j b m s o t D G d s o

On March 5, 1928, abdominal exploration was performed. The peritoneum was explored and small cystic ovary was removed. The cecum and ileum were then examined and at a point about 18 inches above the cecum a thick band in appearance not unlike arrowed band was found, connecting the ileum with the umbilicus. This was freed from adhesions and completely divided. The band of bowel was then traced to the umbilicus and secured. On being opened it was found to be patent. The patient made an uneventful recovery and left the hospital on the twelfth postoperative day in good condition.

Comment.—These 2 cases represent a new entity in abdominal surgery, namely, omphalomesenteric fistula. In the case of the first patient the diagnosis of cecal peptidosis was difficult, the only pertinent clue being the abdominal tenderness and the palpable mass. The abdominal examination suggested the possibility of a small intestine loop, and the laparotomy confirmed the patient's malformation. The patient was treated by the usual method of resection and anastomosis.

CLINIC OF DR ARTHUR B CECIL

HOSPITAL OF THE GOOD SAMARITAN LOS ANGELES

TREATMENT OF A CASE OF MALE HYPOSPADIAS

R C L A g! Chld H p t l \ 2864
 B F b ry 12 1916 Adm t t d t th Chld H p t a l S p-
 t m b 14 1920 C m p l t M l f m t f p e d M t h t t e d
 h l d t d f m o p g f t f t h t m T t h h l f
 l g d B F t h d M t h l g d w l l Chld f l l t m E
 m t h e d w l l h d d w l l d l p d h l d p t f d
 f m t y f t h g t a l T h p e w f d t b h p l y r v d d n



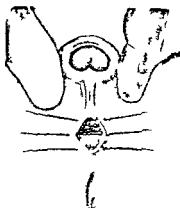
Fig 466

d d h l d t h b t g f i b l d T h p p l k g
 t h d f l h o o d l k b T h p t c a l l y t m
 l t h t t l l d t b e p l p a t e d l t h p e m t h l t l k
 p o h t h p e g f t h t h t h g h h h t h h l l d d
 (See Fig 466) T h h l d h p e f t t l l t B l d d
 †

Op tip N 1 D is f F b Band f C r r hon f Cur
 tur f P n₁ —Eth eth na W th th pe p ll d p d tra er



H. L. W. m. p. n.
 F g 46



H. L. W. m. p. n.
 F g 468

d r t mad ss th k i fib d h h h ld d
 f H k M kul m hod (Se F 46 469 h k w i sed

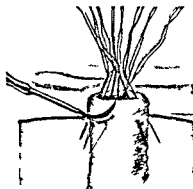
A l t f th p t th pe b cam f d mal f
l t d

Op t n N 2 Car um and Pl ti F rm to f U th f m
F skin—Th h ld y ld W dm tt ! M h 2 1925



F g 469

Eth th Th h l d f k p l l f m d d d t
f l t t th l d 6 l l t ht t t l dl



l g 40

passed through the lumen of the tube (See Fig 40) The
 fork is partially inserted into the tube and the
 lid is pulled back (See Fig 41) The fork is then
 withdrawn and the tube is closed.

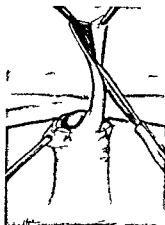


Fig 471

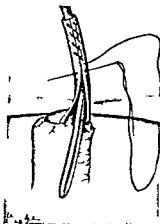


Fig 472

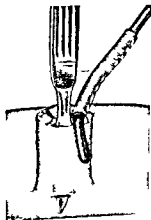


Fig 473

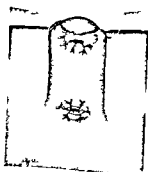


Fig 474

bo t N 14 rubber cath lead g d f h l g l h t
 h ka might lid po th ca h h th ca h d f esk
 pulled d h k f th d m f h pe (See Fig 42 473)

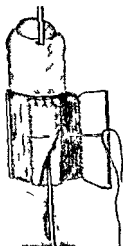
Th mpt t f th gr ft h n Fg 474 Th k g ft took
pe f tly

Op r t n N 3 Skin g aft f m th Th gh t Form U ethr l Can l
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10 by 4 m Th fl p f k i w t d bo t N 10 soft bb r cath
t d th t b l g ft w t d d b th th k f th p l
th t d g f m th g f th p mal port f th f esk
g ft f d t f pp n t ly 10 m Th g ft d d t mt l gh
t b t pp tly b bed t d d t p d ! d th g
f r h th h ld pe ted by H gn t h J ry
13 1928

Op at n No 4 H g Ski fl p Te hn (J 13 1928) —
Ch ld w tw l ld Th t g f th i t ll h
Fg 475-479 th t d pt i e ry lod l l h l



Fg 45



Fg 476

ed f l g p N 00 catg t d f th d pe t d ll
tay t f ll N d fficulty t d t m g th
wly f m d th th th h h h d p ly bee f h d
f m h f l Th graft took pe f tly d t th l ea l
a th lt t f g f m th gl t th 2 m f th hypo pad
pe g th pe m

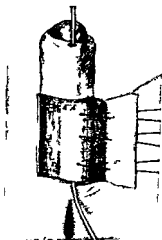


Fig 47

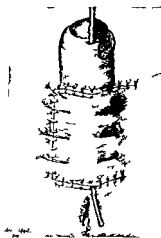
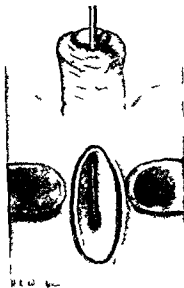


Fig 478



Op t N 5 S p pub cD in g Pl ti Op t P in m
f th C mpl t f Ur thr in P in al Hyp padia (M h 27 1928) —



Fg 480

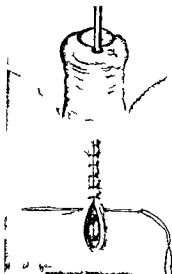
S p p b d g Th th t ted bo t so d h w in
Fgs 480-482 N 00 catgut d f th d p t d lk



Fg 481

f th k t Th pl t pe t Iso t k pe fecly d th ood
lt bta ed d t th bsol t co t w h g f th p
p b dra g t b by fi t se I d th f th m t m

po t t f t th g f th case It h be ggested ha
 pl t pe t th h h ld t b d rt k t l th pa
 ld gh t pp t th b o l t eces ty f perf ct ca f th
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 ce sary b t t ee sary th t th t b be t ly tch d ght
 d d by



F g 4

R ult f Pl sti Op ti f th Cur f C 28642—Th h ld
 d h ged f m th h p l Ap l 19 19 8 t h h m th p
 p b d pe in l d l ed A N 14 ca h l b p ssed
 t th bl dd h gh h m d th \ h e i p
 m t ly t m th f h ld d sch g i h i m l
 f h

TREATMENT OF A CASE OF MALE EPISPADIAS

L G L A g l Ch l l H p t l
 O J S 1922 th d m t t d t th L A g l Ch l d
 H p t l boy f r y l d h b th h d h d co t t d b b l g
 f u f m p g b l th y m p h y t t h e o o t f t h p Th
 l l d f p d l d d t b r t h w g h l 7 1/2 p o d H w
 l l h d d l l d e v l p e d
 H g l p h y s i c a l e x a m t g t p t f t h l f m
 t h h l w i l l w d s c l t y u Th p b b o w e j l t g t h
 b y f i b b d 3 m d m t Th t h g h t e d t d



Fig 483

A t t h o o t f t h p e p e g t h g h h h l d l m t
 s e t h l t t l f g l f m w h h t h t t d l b l g f
 Th p t t d l t l l p l y j d p o t h l b d m l
 l l I f t t e d d l y d t h t h l e a l
 t l y p e O l f t h f m a k d l y d d t
 (S F g 483 484) T l l m a l d t h t h c r t m
 Th h e d l g h t t c e f l l m l f p > c e l l T h l l o o d
 m l

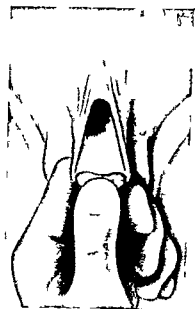
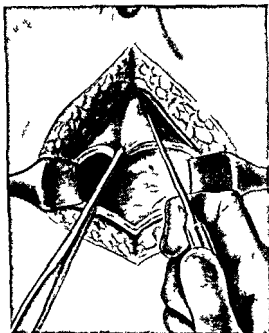


Fig 484

Ope ti N 1 S pr p b Cy t t my f R p ur f Int rnal V cal
 Sphn t (J 9 19)—M d ec Bl dd f d be
 bo t th f al t Th rn l cal ph d ly d l t d
 A t mp mad t gh h l cal ph by d d g
 moo haped pec f m m mb f m h la l d po
 w ll f h t m l re hral fi d b g Th p od ced t gh
 rn l cal ph Th bl dd l sed p f prap b
 dra ge t be
 Th lt f h p oced a ll rthl ss Th prap b
 d becam ru ted h l m sal d h h l d h ch ld h d th
 sam in t ce p th p
 Th p oced p pe h h pl t d f
 pl cating th ly part f h m t ph h h a rmal Th
 t say h post part d d d f g h cal eck d
 br g g t g th ly h h th m h h h rn l
 sphn er h ld be pau ed th se case
 Th h ld los gh f l Ap l 27 1926 h h dm t ed
 t h Hosp l f th Good Sam f f rth m Exam
 t h tm h ed hang h g ral d b d h be
 y mp m h co t t f t l th p b g h
 as b oad sca f m h p prap t cy my

Op t N 2 S p p b Cy t t my f R par f I t m l V al
 Sphun t (Ap 1 28 1926)—V d l Aft po g th bladd
 h h w f d t b ry mall th l k w m b l d by p t g
 t f m th t b th th fib b d wh h h l d t g th th bo f
 th pel I th g th bl dd k f d t be ry th n d
 l i b sep t d fr m th t b th th fib b d ly w th
 d b l d ff lty (S F g 485)
 H g f d th k f th bl dd p p b p g te d d
 d d d th fib b d wh h h l d t g th th p b b Th



F g 485

c ed l f t se m d p bl t t d t A
 mall V h p l p to w m d f m th t pect f th es cal
 eck Th cal eck b ght tightly t g th N 12
 cath t l th l t d p d t d th t l f f
 th bl d l m t g th fixat f p p b d g t be (Se
 F g 486)
 A lt f th pe t th p t t g d d bl co t l
 f h d f th fi t t m k h t t t h d r t t
 W ld t h h l l pe f tly R fl ly h h l d t th m t
 f 100 At t h ld g h t t g h l h b t t th

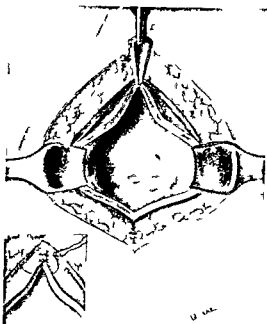


Fig 486



t m m o ld p At ghth h d t Bgh d
y w m d th fth hll byth p t

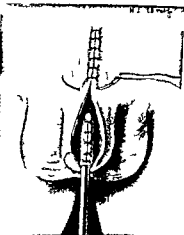
Op t N 3 R trut f U th al C l m Ep sp d
(J y 19)—I Ag l Chld H pt l Sp p b d ag
t bl h d b tt g d th tp f d d W th th p
d a ll d w l t p f k w l d d l w Fg 487



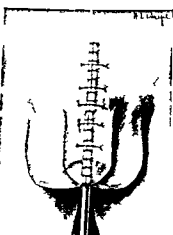
Fg 488

Ad p t t d dt b gt b th th t fth th
h b y l th cal eck (See Fg 488)
Th l f t th t d th gh t th te t f th
pe so d be g sel t ly t d p th pe d h ld po t
b t Isof th p pose f tl g th th (S Fg 489)
Th pe fi l f th pe b gh tog th th
rupt d lk h Fg 490
F ll g th f t th l bl d f th pe
Th p batt d t th deep t g h h h d be t od d d

th oot f th pe t pa th ph t m eel Th p t t m
 h ga th ppea ce f g gr d so th t t
 m d A cath t t l t
 Th lt f th se pe t p oced th case f ll
 Th bo h pe sect t l f h bl dd t ght M t f th t m h
 ha perf t co t ld g h d y Wh h t d h bl t h ld th



Fg 489



Fg 490

m b th ld g p bably
 th l ca l ry ll co t t d d th
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 po b t p cally Th bo bl
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 pa sed th gh t Th
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 d h bsol l f

CLINIC OF DR. GUY COCHRAN

CHILDREN'S HOSPITAL LOS ANGELES

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS IN INFANTS

HERE is a male baby of the most frequent type (In our series there have been 5 males to 1 female) He is four weeks old birth weight is 7 pound 2 ounces present weight is 7 pound is breast fed He has cried after each feeding since birth but has been well until three days ago when he vomited for the first time Since then he has vomited after each feeding and after taking water the vomitus being always projectile The bowels moved four days ago Since that time only a little mucus followed the use of a suppository You will notice that the cry of the baby is that of starvation and that his skin hangs in loose folds from dehydration

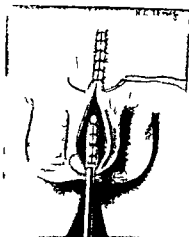
We are unable to palpate a tumor at the pylorus but this is not unusual for in many we find at operation that the tumor at the pylorus lies under the border of the liver or is too deep in the abdomen to be felt therefore a palpable tumor as a symptom is negligible Since he has been in the hospital the usual peristaltic wave from left to right has been observed on several occasions

The pylorospasm cases are usually ruled out after a couple of days observation with change of feeding and by the use of atropin The x ray has not been of help and has been practically abandoned

The dehydration of these babies is always marked and because it is as big a factor as the starvation we endeavor to improve this condition by salt solution into the abdomen or hypodermatoclysis in some form before operation especially if the child has not lost over 20 per cent of its weight for that lo

th oot f th pe t pa th ph t m scl Th pe t e,
 h ev ga th ppea ce f g g d so th t es t re
 m ed A cath t t l t

Th es lt f th se perat p oc d th case f ll ws
 Th bo h pe fect t l f h bl dd t ght M t f th t m h
 h perfect co t ld g th d y Wh h t d h bl t h ld th



Fg 489



Fg 490

m b t th ld g p liably t d y eek Th
 th l ca l vrv ll co ru t d d h pa sed th gh t Th
 t f ma t m dport h h d p t f
 vud h h t Th pe oc p bsol t ly mal
 po b p call Th bo bl g school h g
 h h bef a ll mpo bl It bel d h l sol l f
 t on w ll be h l m m

the thin duodenal wall and get a leak which means peritonitis later or a vessel which bleed freely and cannot be clamped without tearing through the wall of the duodenum. When either of these accidents have occurred we have thrown a suture over the area to stop the bleeding or close the leak and begin again with an entirely new incision for our attempts at repair have not been successful. We have not found it necessary to fill the gap by any plastic endeavor for there have been no adhesions to this area and the remaining circular fibers quickly melt away. This was not true when we did the old gastro enterostomy for in these the band remained. The abdomen is then filled with salt solution and the abdominal wound closed in the usual manner however in bad risks time is frequently saved by making the abdominal closure through and through with silk.

There is nothing in surgery more spectacular than the convalescence of these cases. They usually vomit once or twice after being put to bed. They are given hypodermatoclysis in some form and are kept warm. Feeding is begun with 1 or 2 drams of diluted mother's milk every two hours which is gradually increased until the baby is in good condition—which is usually within two days—and from then on gains its weight rapidly.

Throughout the entire case each baby is regarded as a feeding case with surgery as an incident. By this I mean we want the pediatrician's full cooperation all the way.

appear to be the dividing point between those who are good risks and those who are bad

If the child has lost over 20 per cent of weight we operate anyway for though they are bad risks we feel that surgery offers the only chance. We have had so many who are nearly moribund when we get them that it has greatly raised our surgical mortality percentage but we cannot help that except by educating the doctors to be on the lookout for these cases and get them to surgery earlier. We have operated 105 babies. In the group who have less than 20 per cent body weight our mortality is 3 per cent as against 35 per cent in the moribund ones.

On the operating table they are kept warm by hot water bottles about them. Ethel has performed the most satisfactory antiseptic and it is remarkable how much is required for the small babies. Through an upper right rectus incision the pylorus is dissected into the wound by a blunt hook covered with rubber tubing for every effort made not to handle the stomach or to cease unnecessarily. This case shows the usual erythrocolic tumour of the pylorus. It is about the size of an olive and consists of firm circular muscle tissue. The Rammstedt technique is followed in all cases.

The tumour is held between the thumb and index finger of the left hand. It is careful to avoid the duct on for we have had two deaths by block following the operation which we believe to be due to distension of the tumour to get it well into the fundus and the block of the celiac ganglion.

A longitudinal incision is made through the most bulging area of the pylorus. The fundus is depressed by blunt dissection by opening and clearing a mass just before putting the mucosa open. The procedure carried out through the enterotomy of the tumour. If necessary a further incision is required.

You will notice that at the end of the incision the bile thickens. If the tumour is thick the demand on the gas is put on the whole of the distended tumour. The outpouring of the fluid. The incidence of perforation is not high.

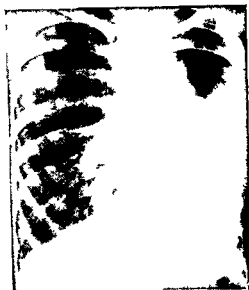


Fig 493—D mb 5 1927 Aft fi t p t R t f fif h
t t th b l ft l Uppe y t h g d L l be pe d
d p k d th g



Fig 494—J ry 21 1928 R h ect t y t f l ft l l be filled
h l p od l h h po ed t th pe d



Fig 491—A gu 14 19 M ked d t f th t chea t h l f
 A l g co g ca h fl j th tra d ru g
 h gb espo j g th l f ppe l be A m l locula ca y belo
 co rul be dra od ced th gh ld sect pe g th
 t h b



Fig 49 —Oa be 12 19 l p od l ec l h h d
 b h ll T hia d l f La g f l f ppe l be
 persu L p od l fill f sacs th l l f l be h h ld h r v se
 t be pf D ll pl

Th l d pl t l ged d t p lp bl th t f th
 bd m m l
 Th d m
 Th wa m l Th bl d t w f ll If gl b
 85 pe t (Sahl) d blood ll 5 080 000 h t blood lbs, 7800
 pol m ph l 68 lymph yt 32



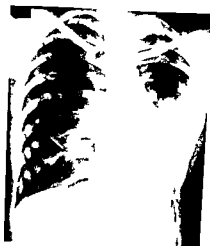
Fig 49 —M y 1928 L ft d ph gm d h t p li d t gly
 t h l f d 6ll th p f m ly p d by th l w l f t l be Th
 pp l b ca t t ll mpt

D J h R hf h po t d th y f ll
 Ch t (O t b 11 192)—Fl p lly th l ft d ph gm t
 b d t tly m l t th h t d m m f ll t l d by
 ga b b l l b l It loe t m Th ght d ph gm hyp
 t

St p t po h t film h w m k d ll p
 f h l f l g h l g p m h oc py g p t cally th t
 ppe h H f th l ft h t Th l l b w ld m t b t so w ll
 l ps d It d sel lect d th b h l t pply g t b h
 co t g b ll m d t b l th hea t h d w th pe
 lly ll d m t t d h th pl t d t sc p cally \
 post l th t th b h b m d po t ly d d g t be
 se t d th gh h bo y d fec t h l po th l ft h t j
 be th d ph gm Th fl p se t Th h t d m d t l
 t h bec l pl ed f th l f d m h f th h l h d w
 f th ght l g l l h l h t l l l m Th ght l g t self



F g 49 —F br u r y 11 19 8 C y t f l f p p e l h g f d Th
ll h be e d R g h t h l d b e l f



F g 496 —M h 12 19 8 L p d l j f v t p f l f
l l b e M b h l f l l b d b l l l f p p e c a t y
g t a b f d

Th h r t a d p l d l h h l f f h l f p p l l th
r g h t b o d l y j h t h l f f h m

bronchiectasis that had perforated into the chest. I advised an attempt at closure after the manner of Colonel Keller.

I may as well state here that both Dr. Rehfisch and I were mistaken. What we took to be a large pneumothorax cavity was not a pneumothorax but a huge unilocular cyst of the left upper lobe. The left lower lobe was not collapsed but consisted of a series of bronchiectatic cysts and the drainage tubes lay in one of these cysts and not in the pleural cavity.

On October 20, 1927, under satisfactory gas and local anesthesia, a curved incision was made over the left chest and about 5 or 6 inches of three ribs including two below the one which had grown around the drainage tube and this rib itself were resected. Upon opening the pleura one entered a sacculated multilocular cavity into whose top an open bronchial mouth debouched. The upper part of the chest which from the radiographs seemed to consist of one large pneumothorax cavity was now seen to be closed from the present thoracic opening by the above mentioned sacculated membrane. The pericardium lay at the front of the wound. The soft parts were brought down over the pericardium with one mattress stitch and the rest of the wound was left open, the sacculated cavity being packed with balsam of Peru gauze. It appeared probable that the cavities were bronchiectatic.

The boy made a good recovery.

On November 7, 1927, my note read: "The old cavity exposed at previous operation is clean and granulating. The pericardium is visible in the bottom of it and between it and the chest wall lies a trabeculated meshwork into whose pouches various bronchi debouch, touching these bronchi immediately provokes a cough. Access to the upper part of the pleural cavity which radiographically seems to consist of a single large space is not got by this first operation; a needle introduced into the upper chest in two places withdraws air. In order to open the upper part of the chest, therefore, 2 inches of two more ribs are resected from about the costal angle forward. The underlying parietal pleura is about 1/8 inch thick, underlying it and clearly separable from it in a cleavage plane is another thin membrane

ppe mal f t p th logy ed Th sm ll
 cal fied od l t th ght t p
 C l —D g t b l ft h t w h mpl t ll pse f pper
 l ft l be d pa l ll pse f l w l ft l be
 L p od l f f f Ch t (O be 12 19 7)—Fl osc p call th
 l p od l t be part lly b ru ed j t bel th po t h th gh
 m j b h t k g A d bl m t f l d ps l l d wa
 pa t th po t d t mall bloc l p ddi h l marn t
 th mm f th d m f th diaphragm Th p ddi h lea l d
 t bl ect th t l g b h d t b hual f t
 bea t f lly d m t d th eo-c p film

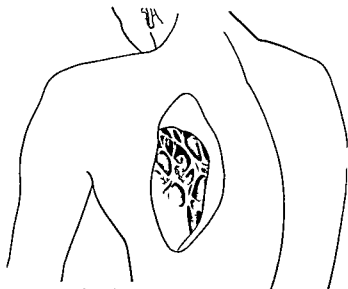


Fig 498 —D n f m ph t or ph Sh p ly l l be f f t

Th l t l h h t h b h p ddi ry ea h
 d sal bo d f th gh ba Wh h pa se h t h c
 p ss l tarly th l f d p d d f h d g be
 C l —St os f th ght l t h h pe ph l b
 h d l ta h p ct ll ll p d! h l b h b hual
 fist l ect g t t h d ld

I di nosed a chr m m w th b h l h tul a d
 thou ht t most l kel th t w h d t de l th ge t l

sent home with a small sinus leading to the stump of the left lower main bronchus which still secreted a few cubic centimeters of mucopus a day. Since he has been at home a few black silk sutures have been discharged from the sinus. A lipiodol injection shows it to lead into the left main bronchus. No connection between the large cyst of the left upper lobe and the sinus is demonstrable.

What to do with the large cavity of the upper lobe is a problem. An extensive thoracoplasty will probably collapse it but it is doubtful whether any operation is justifiable as the lad has no trouble from the large air containing cyst.

Isolated congenital cysts of the lung are rare but a considerable number have been reported. Sultan operated upon a suppurating cyst of the left lung in a twenty three year old girl she succumbed to a postoperative empyema. Sauerbruch operated upon two: one a woman with a cyst of the right upper lobe who died of postoperative shock, a second patient with a left sided cyst was cured.

Cystic degeneration of an entire lobe is also reported. Clairmont (*Deutsche Zeitschrift für Chirurgie* 200: 157) operated upon a boy of ten with a cystic degeneration of the right middle lobe; the boy died of postoperative shock or embolism. Sauerbruch (*Archiv für Klinische Chirurgie* 148: 721) in a short communication to the 1927 meeting of the German Surgical Society speaks of 4 patients sent to his clinic for treatment of what was taken to be chronic empyema. The chests of the first two were collapsed by the usual method when to his surprise he found that what was taken to be an empyema consisted in reality of large cystic pulmonary cavities. Fortified by this experience he was able to make a correct diagnosis in the other two. All 4 patients were cured after extirpation or resection of the diseased lobe.

Robert T. Miller, Jr. (*Archives of Surgery* 12: 392) reports most interestingly upon 2 infants: one with a congenital cystic lung exactly similar to this patient's except that in the infant the right lung was affected. A child of five weeks was brought to the Johns Hopkins Hospital suffering from attacks of dyspnea, cyanosis and labored breathing coming on usually twice a

perhaps 3/4 inch thick when this entered one looks into a large cavity occupying the whole upper chest girth and glistening its medial surface pierced by numerous openings the largest perhaps 1/4 inch across some of them running as tunnels superficially in and out of the thin membrane others probably running toward the bronchi. Between this very large cavity and the multiple trabecular ones opened at the previous operation lies a thin but tough fibrous septum perhaps a little over 1/4 inch thick which in its center clearly carries a little spongy lung tissue. This septum runs on to the chest wall and completely separates the newly opened very large upper cavity from the smaller trabecular ones opened at the first operation. *Diglossis*. Congenital maldevelopment left lung. Bronchiectasis of lower left lobe and enormous bronchiectasis of left upper.

After about a week the drainage tube was removed from the large cyst of the upper lobe the pleural fluid and no further fluid collected in it. The trabeculae of the lower lobe shrank in the course of the patient's two month stay in hospital leaving exposed the large shallow half-opened pouches that represented the open cysts of the left lower lobe. They were lined with a delicate reddish bronchial mucosa. Though the trachea did not cough but the large lumina leading toward the hilum were extremely sensitive so that touching them with an instrument sent the patient into fits of coughing. The pouches carried a clear thick watery mucus.

On January 4 1928 the sacculated and pendulous lower lobe was dissected off from the pericardium and diaphragm to which it was attached partially with a knife partially with the gouge. A thin layer of alveolar parenchyma surrounded the large pouches. At the end of dissection two large bronchial branches led into the left lower main bronchus. These were cut crosswise and the hilum was tied and the bronchial mouth closed with fine black silk sutures. The soft part of the skin on the uppercut was loosened and popped in over the bronchial stump and loosely united with silk worm gut suture. A tracheostomy was done on February 17th.

The boy again made a good recovery and on March 12th was

tacks of dyspnea and cyanosis. The plate of the lung shows multiple smaller cysts like those of a polycystic kidney with large areas of sound lung in between them.

Sauerbruch thinks that congenital cystic degeneration may be caused in an early stage of development by a duct of Cuvier which stretching unusually sharply across the hilum of the embryonal lung bud constricts it and presses upon it. The preponderance of left-sided bronchiectatic anomalies is explained by the relation between the right and left ducts of Cuvier. The left lies lower; the heart compresses the left lung more sharply against the duct. Meyer's plate (reproduced in Miller's paper) seems to corroborate this theory.

Diagnosis of congenital cystic lungs is difficult, often impossible. When a communication with a bronchus exists an x-ray with lipiodol will prove that the oil lies in the lung and not in the pleura and that we are dealing with a cyst and not a pneumothorax. If the cyst contains air but does not demonstrably communicate with the bronchus, then the presence in the films of a shadow corresponding to an interlobar septum will reveal the facts; for if one had to do with a pneumothorax and a greatly collapsed lung, the interlobar septum would also be collapsed. Such a shadow is visible both in Miller's films and in my own.

If one has to deal with a solitary cyst or a single cystic lobe filled not with air but with fluid or pus, the diagnosis is still more difficult. Clairmont's patient was thought at first to have an interlobar empyema; yet as Clairmont remarks, the shadow was a rectangular one running squarely across the chest, whereas the shadow of an interlobar collection is more often wedge-shaped with its base toward the lateral chest wall.

Other cysts are to be considered. An echinococcus cyst may give rise to urticaria, shows the typical echinococcic complement fixation, and the fluid, if one dares aspirate it, may contain scolices and be watery and clear. Radiographically there is likely to be seen a zone of normal lung in the lobe containing the cyst. A dermoid cyst may reveal teeth or bones, strongly radiopaque shadows. An old encapsulated tuberculous empyema may show

day and last from fifteen to thirty minute during which the child fought for breath. X-ray films were reproduced that Miller interpreted as a complete pneumothorax of the right side considering that a spontaneous rupture of the cystic lung into the pleural space had occurred. A needle inserted into the chest released air under high pressure the mediastinum which was driven far over to the left returned to the midline and the child's attack was immediately cut short. After repeated curatives relieved by repeated puncture a tube fitted with a one-way valve was introduced which gave complete relief as long as it was in place. It was removed at the end of a week and the child was discharged with its heart in normal position with a partially expanded right lung and with breath sounds coming through at the base although with a somewhat tympanic percussion note over the right half of the chest. At the age of five months the attacks of tremor, cyanosis and cyanosis in turn did not finally ended in an attack. No longer was done.

Reviewing this report in the light of the experience gathered from the patient we have under consideration it seems to me that there is no evidence that rupture of the lung with consequent pneumothorax occurred in Miller's baby. There was certainly no pneumothorax in Meyer's case cited by Miller in his paper with exactly similar symptoms. A cystic dilatation with partial bronchial tenosis admitting air more freely during inspiration than it allowed it to escape during expiration would lead to the same position of thoracic pressure. It is likely also that the alveolar-like obstruction must be a part of the process which led to the cystic degeneration of the lung. Furthermore I think that the anterior septum running from the midline to the chest wall is distinguishable in both Figures 2 and clearly in Figure 3 of Miller's paper which obviously would not appear were the lung collapsed. I think it likely therefore that with the distended cystic lung and not pneumothorax that drove the mediastinal contents to the left and that Miller's needle and his tube entered the lung itself and not the pleura and that the tube must have been in place without fear of causing an empyem.

The second child died on the twelfth day of life of an infection.

may be cut away and the operation completed at another sitting or at several. The galvanocautery lends itself well to dissection the operation is less bloody than with a knife. It is well not to attempt a total lobectomy but to leave a little lung tissue about the hilum to cover the bronchial stumps which should be closed with a series of fine silk suture.

Large uninfected cysts without pressure symptoms may be left untreated.

sion of tuberculo; elsewhere radiographically it may be indistinguishable these cysts of course contain fluid but no air.

The terrifying recurrent attacks described by Miller Meyer and others in which an infant fights for breath turns blue wheezes while and chokes and finally dies in an attack are characteristic. They are due to increased air pressure in a partially obstructed cyst. The same attacks however will accompany a pre- or post-natal pneumothorax from which the presence of an interlobar septum radiologically demonstrable will distinguish them. If the cyst communicates with the bronchus perfectly freely or at all with the bronchus then these attacks are absent and in the both instances the symptom will be quite uncharacteristic. With free communication the symptom and sign will be that of a wide open internal pneumothorax with no communication at all the cyst usually a small one containing a mucous secretion and make the symptom of a benign intrathoracic tumor or of an intrathoracic abscess or perhaps no symptom at all.

The signs are those of a pneumothorax with or without pressure and mediastinal deviation of the chest, or of an intrathoracic tumour—an empyema—an abscess if treated. Accordingly, a thoracic steriliser or not the patient are free of fever, cough and expectoration.

The is often a coal with little or no putum

In infants with signs of increased intrathoracic tension and mediastinal displacement the cyst should be opened through the intercostal space by a small tube or by making up a flap of skin and sewing this into the cyst to the lining of the chest. I doubt whether the baby would undertake labor in an infant of 6 months. In the older patient with opening of the cyst into the bronchus, the complete removal of the lobes and suturing of the communicating bronchus is indicated. Dissection of the cyst is not asy as adhesion is present. The pharynx is not involved and the dissection is easily performed. The pleura is not involved. The hilum is the usual place and requires no further dissection. If we direct the incision may be interrupted at any time the partially fed baby may be packed about with gauze and the patient

CLINIC OF DR J EARL ELSE

DEPARTMENT OF GENERAL SURGERY UNIVERSITY OF OREGON
MEDICAL SCHOOL

PREVENTION OF RECURRENT GOITER

SINCE Kocher began his work with goiter there has been a continuous discussion as to the efficiency of different methods of treatment especially as to the relative value of operative and medical treatment. At first the mortality rate was such that the danger of the operation was an important factor in the discussion. But today with the use of Lugol's solution in preparing the patient for operation and the greatly improved technique the mortality rate in the hands of a skilled goiter surgeon is very low in fact it is less than the mortality rate from cardiac disease due to toxic goiter in those who are not operated upon. The internists for the most part no longer treat toxic goiter with the idea of a cure but merely for the purpose of preparing the patient before referring him to the surgeon. The x-ray treatment has had its days and is no longer used except by x-ray enthusiasts and a few general practitioners. The question of the prevention of goiter with the exception of the congenital form is pretty well understood.

Formerly most of the goiter operations were done by surgeons especially interested in goiter who had because of this interest developed such ability that they might be referred to as goiter surgeons. With the increase in the interest in goiter general surgeons and general practitioners began operating upon goiter so that today the most of the goiter operations are not being done by the specially trained goiter surgeons. As a result there has been at least in our clinic a considerable increase in the number of patients coming in with recurrences following operation. I see as many now in one year as I formerly saw in two or three years.

The third group that due to incomplete operation is the group that is increasing today. The operation for goiter is not as simple as it looks. I am frequently asked how much of the thyroid gland should be removed in the different types of goiter. In my judgment there is only one reply. Remove all except a thin layer along the posterior capsule. Leave the same amount of thyroid in all types of goiter regardless of whether it belongs to the extreme colloid form of the diffuse adenomatous type or the very toxic exophthalmic type. Our rule is to remove practically all of the gland leaving only enough of each lobe to permit regeneration. If a sufficient amount of the diseased gland is left to secrete thyroxin enough to care for the needs of the patient the patient is very apt to have a continuation of the goiter because the gland left is still a diseased gland. We remove so much of the gland that the patient would have hypothyroidism or even myxedema if there were no regeneration. There is no gland in the body in which regeneration takes place more easily and more readily than it does in the thyroid gland. Were it not for this goiter would not be nearly so common. Exophthalmic goiter is an excessive hyperplasia of the epithelial cells lining the acini; adenoma is an excessive localized hyperplasia of acini; and the diffuse adenomatous goiter an excessive diffuse hyperplasia of acini; all due to the great regenerative power of the thyroid gland. I have studied the ability of regeneration upon rabbits and dogs. In both of these animals I found that when enough thyroid was left to supply the needs of the animal no regeneration took place but when so much of the gland was removed that there could not be enough thyroxin supplied there was an increase in the amount of colloid secreted within two days and within a week hyperplasia began. This hyperplasia was rapid so that in from three to four weeks it was entirely completed. The problem in operating upon the goiter patient is not one of leaving gland enough to meet the needs of the patient but one of leaving gland enough to secure regeneration. This amount we found in our experimental work is exceedingly small.

The e recurrences we group roughly into four clas es First error in diagno i second patients operated up n after pe manent lesions have been produced third incomplete operation a d fourth true recurrence

First group A patient whom I saw yesterday will illu trate thi group

Th pa t ma th y f ge Am ca d married
F mul h t ry F h d d f p m M h l v g h g
T chld l g H ba d ll \ h t ry f ea t be culos m
f ml Pre ll sse R pt ed ppe d y g d t bal p g
tw y g
P se t mpl t (1) T h yca d d p lp tat f heart (2)
ss (3) l ss f gh (4) ll g f f t () t pat
P ese t illness Bega f l g badly h ee d h lf m th g
T h ca dia and palp t t t ced f tw m h H los som w ght
b doe t kn w h m ch Appet t good O d ect q es d r g
xam t ted h a lght gh b t d d t m t th m g
l t f mpl
Exam Pulse 96 regula T mpe t 98.6 F Blood p ss
124 SS T l ta d caseo m r l Th d palpabl d l
l Roe g ra p f ch t l d ly d f tube l

Now here i a patient who h t chycardia palp taton nervou ne nd tremor sh ha lo t me weight and has ooter Sh w s ferred to m u der a di on of toxi oster He phy cando n t perat Had he con ult d ne who did he mht ha e b en perat d upon If thi pat ent were to b pe ted upon h would f elbett nd sh w actual impr ment b cau e of the re t in bed but in a ho t time all f her mpt m w uld return and until the pulmonary lesi n h d been da on ed h would have been ard d s ha n a e u ence An lov de infection m v p duce ympt m mul t n rly h pertyro di m

The econd t p f so- all d re urr n e th e m wh h th pat ents ha e be n ope ated up n after p m n t le io s ha e b en pr duce d c ns qu tly lthou h th go te may be cu ed by the op r ti n th pat nt wall tll h th rd c of go te in th d ma d he rt and the d m g d n rvo s y t m

man forty years of age with a toxic hyperplastic (exophthalmic) goiter. Although he has been operated upon twice elsewhere he still has a goiter because the operation have both been incomplete. This patient has retrotracheal extensions on each side. This is the most common cause of incomplete operation in the hands of the better surgeons and yet they are easy to find both before and at operation if one is on the lookout for them.

The method of examination is important. In palpating a thyroid gland I prefer to stand behind the seated patient. The tip of the forefinger of the right hand is placed over the upper pole of the right lobe, the middle finger at the center and the ring finger over the lower pole or if this is low at the upper border of the clavicle. The left hand is similarly placed on the left side. The lobes are then palpated with the three fingers on each side. The patient is asked to swallow at which time the ring finger is dipped below the lower pole except in those patients where the gland lies so low it cannot be lifted high enough by swallowing.

Next still standing behind the patient the fore and middle fingers of the left hand are pressed against the center of the outer border of the left lobe at a point posterior to the trachea so as to rotate the right lobe outward and forward. At the same time the right lobe is palpated between the thumb and first two fingers of the right hand. The process is then repeated to examine the left lobe. If there are retrotracheal extensions they are rotated outward and can then be palpated. Examination of this patient by this method showed definite retrotracheal masses on both sides. The incision is made along the old scar and the muscle separated along the midline. Sometimes the ribbon muscles have to be cut in secondary operations but usually a good exposure may be had without as the location of the recurrent laryngeal nerve is uncertain because of the adhesions from the two former operations. The right lobe will be grasped with the vulsellum forceps pulled out from the trachea. By lifting forward and turning the forceps around a fairly large retrotracheal extension is found which has never been touched. This is the cause of the failure of the two previous operations. We will now make a longitudinal

The first two patients we have to operate upon this morning are those with pseudo recurrences.

The first patient is a 40-year-old male.
 Complaint (1) Goiter (2) thyroid palpitation (3) tremor (4)
 Insomnia (5) nervousness (6) eased with thyroid
 Pills. Present illness: Patient reports a palpitation two years
 ago followed by a year of full-grown palpitations with
 the year before the heart beat was normal. During the last 100
 Sh. tested for progress of myocardial blood flow and me-
 made the patient's heart. Localized palpitation with gh-petit
 increased.
 Examination: Patient presents typical parathyroid hyper-
 g. Pulse 100, m.p.e. 99. F. blood pressure 26/100. Mild
 exophthalmos. Physical: The right lobe is enlarged, grad 2.1 ft. lobe
 palpable. Gl. d. f. m. Heart: Ape beat heard, type 1, mitted
 to heart. Second great thoracic d.p. l.m.
 Abdominal: rt. palpable, d. b. t. f. cef. l. T. m. grad 4. B. sal-
 m. tabol. rat. +101.

This patient was sent to the hospital and put at bedside
 rest in bed 10 or in of venous was given each evening and 5
 grain each morning for the first few days. She was given 25
 minims of Luol's solution four times daily. Diet was food.
 Today instead of having a nervous apprehensive patient we
 have one who has been brought to be operated upon. We never
 treat a patient who does not permit the patient mentally
 ready for the operation and the most of them are not nervous
 upon coming to the operating room. At the first operation
 only a portion of one lobe was removed. She has a non-
 enlargement of the other lobe and the tumor. I think it was
 has a non-recurrence of the type. A this type of oper-
 tion no longer done. The recurrence is not the one in whom
 recurrence has been delayed because the recurrence is true ex-
 phthalmic growth in the h. n. l. o. c. l. b. e. h. a. b. e. e. m. v. l. the
 rule and not the exception. In operation upon this patient the
 scar will fit the model and then the operation will not differ
 from our usual operation. The concept that the only lobe an-
 is the tumor.

The next patient is a 40-year-old female of pseudo-
 recurrence who has had a period of relief. The patient

operation for two months by giving 10 minims of Luol's solution three times daily for the first month and then once daily for the second. After the second month all patients are instructed to take either one 10 mm iodine tablet weekly or use iodized salt for both table and cooking use. I think this will prevent most of the recurrences.

I have selected the fourth patient to illustrate the type of operation we do for the purpose of preventing recurrence.

This patient is a female, white, aged 45 years, married, and a housewife. She has a history of goiter for many years, and has had several operations for the same. She has been treated with iodine tablets and has had a good response. She has a large, firm, nontender, symmetrical swelling of the thyroid gland, which is palpable and visible. She has no dysphagia, no hoarseness, and no other symptoms. She has a normal blood pressure and a normal heart. She has a normal chest and lungs. She has a normal abdomen and no other organs enlarged. She has a normal neurological examination. She has a normal skin and mucous membranes. She has a normal hair and nails. She has a normal teeth and mouth. She has a normal eyes and ears. She has a normal nose and throat. She has a normal voice and speech. She has a normal intelligence and personality. She has a normal social and family life. She has a normal occupation and hobbies. She has a normal diet and exercise. She has a normal sleep and rest. She has a normal overall health and well-being.

In the operation note (Fig. 499) that I make only a comparatively short incision. By the use of the Farr retractors this incision will stretch to give ample room. A woman does not like a scar that reaches one third of the way around her neck and it is absolutely unnecessary. Next we separate the skin from the platysma to the prominence of the larynx above and for about 2 cm below the incision and at each angle. This separation especially at the ends of the incision is absolutely essential in the use of the small incision. It is best done by blunt dissection with the Mayo scissors (Fig. 500). If a knife is used troublesome bleeding is often experienced. The Farr retractor is placed so as to stretch the incision vertically (Fig. 501). The muscles are

incision some little distance from the trachea through the capsule and then with my forefinger behind the retrotracheal extension forcing it forward. I will remove the gland from within the capsule by cutting close to it and leaving only a thin layer of gland on the capsule. In this way I will not injure the nerve with the knife. Forceps must be applied on bleeder that they will not touch the capsule for in so doing the nerve may be pinched. The removal of the retrotracheal extension is not difficult when done in this manner. Securing complete hemostasis is more difficult because of danger to the nerve. We use only fine Kelly forceps and pick up just as little thyroid tissue as possible. The suture in closing the capsule must be placed with great care or the nerve will be included in a suture and compressed. On the left side the same condition exists and will be treated in the same manner.

The next patient is a woman thirty-seven years of age with a true recurrence of exophthalmic goiter. I operated upon her five years ago. She was not given iodine either before or after the operation. She now comes in complaining of loss of weight and strength, nervousness, tachycardia and palpitation. She has a definite enlargement of both lobes, more marked on the right than on the left. Pulse 144, blood pressure 140/0 and a basal metabolic rate of +74. This patient has a true recurrence.

In this animal experimental work we took up this problem and found that in dogs when we removed practically all of the thyroid and did not give iodine the regenerative process was more pronounced than in the animals receiving iodine. In the animal receiving iodine the process is completed in from three to four weeks while in those not receiving iodine it continues for a long time. In two of the animals not receiving iodine there was a prothymic or postoperative goiter developed and one of these the picture was that of a distinct illular type. In our experimental work we provided that iodine has a definite influence upon regenerative hyperplasia. We are now using iodine for this purpose in the human. The thyroid gland are all saturated with iodine at the time of operation and kept saturated after the

then separated longitudinally in the midline (Fig. 502). We rarely cut the ribbon muscles. By using the spring retractors with teeth (Fig. 503) an adequate exposure may be had. The



Fig. 502 — 3 F t l t t t h th d
cal d t Th | g f th t t t h th k t
g mpl n

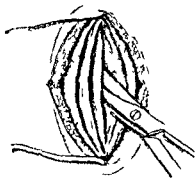


Fig. 503 — 1 h l p l h m dl

l be next closed with vulsellum forceps and lifted out of its bed. The forceps are applied to vessel about the gland.

The method of locating the upper pole is important. With



Fig 499—\ h l t ly h rt

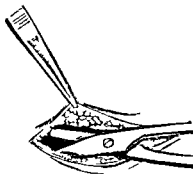


Fig 00—Th k p d f m h pl b t l d se
 Abo t h ld b sep ra d h p m f h l b l f l
 m l b o l l se l h b o h d f h f l f d

sected free by blunt dissection. The nose of the forceps is then placed against the inner surface of the upper pole and passed from within outward hugging the posterior surface of the pole tightly at all times (Fig 505). It must never be passed in the opposite direction. The forceps is then opened and the lower blade of a second forceps is seized. With the second forceps opened it is pulled back so that the lower blade is posterior to the pole and the upper blade is anterior. The second forceps is

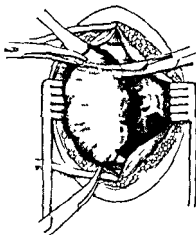


Fig 505 — After setting the upper pole free, the second forceps is passed from within outward hugging the posterior surface of the pole tightly at all times. The forceps is then opened and the lower blade of a second forceps is seized. With the second forceps opened it is pulled back so that the lower blade is posterior to the pole and the upper blade is anterior. The second forceps is

then pushed upward to nearly the tip of the pole and clamped. The upper pole above the forceps is then crushed and ligated (Fig 506) following which the anterior portion of the capsule is cut below the first forceps permitting the gland to escape (Fig 507). The posterior portion of the capsule is not cut. The suspensory ligament is next freed (Fig 508). The isthmus is then

gentle traction the upper pole is pulled outward at the same time that the second assistant pulls the muscle backward (Fig 504). In this manner the upper pole can be reached and

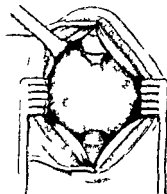


Fig 503—The finger is placed on the teeth to retract the mass so that the incision can be made. A small piece of the mass is then pulled back to expose the pole.

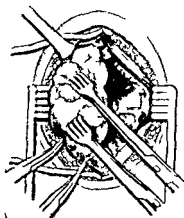


Fig 504—The finger is placed on the teeth to retract the mass so that the incision can be made. A small piece of the mass is then pulled back to expose the pole.

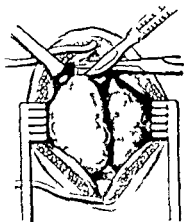


Fig 508—The procedure for the removal of the thyroid gland. The gland is held open by two large surgical clamps. The gland is then removed by the use of a scalpel and forceps. (A 1 1 1 m f p t h)

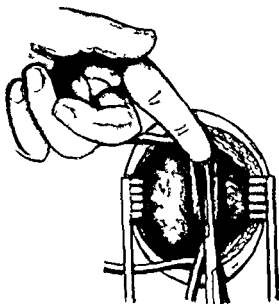


Fig 509—The removal of the thyroid gland. The gland is held open by two large surgical clamps. The gland is then removed by the use of a scalpel and forceps. (A 1 1 1 m f p t h)

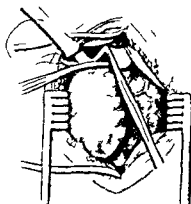


Fig 506—Th ppe pol h d h h p f f p
 d l g t d \ thyr d ss h ld be l f h ppe p l
 t h po p d fes bl ia (V lsell m f p
 h n)

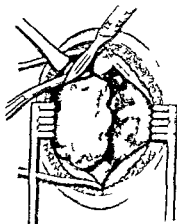


Fig 0 —Tl port f h p l li i pol
 t scape f rw d Th po port f h p l V i
 sell m f ps pl F n4 b h h il
 th ff b tru th)

raised by carefully passing a curved forceps under it from below upward (Fig 509) This forceps must be directed by a finger above the isthmus as otherwise there is danger of injury in the trachea The isthmus is then clamped and cut entirely through (Fig 510) It is essential to completely remove the isthmus leaving the trachea bare because first regeneration in this area is apt to give a mass to which patients object and secondly retraction of scar tissue on the sides of the trachea may exert sufficient traction on the posterior portion of the capsule of the isthmus if left to produce a feeling of constriction

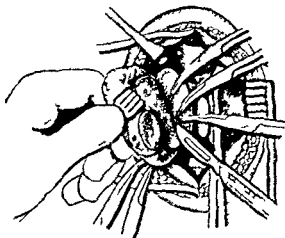


Fig 512—The isthmus is lifted upward and made taut by pulling it posteriorly. If made taut posteriorly it might be injured.

Before starting to remove the lobe it is rotated inward so as to look for a retrotracheal extension (Fig 511) The failure to do this is a frequent cause of recurrence The isthmus is now lifted upward and an incision made into the capsule just below the isthmus (Fig 512) By sharp dissection the gland is then removed leaving only a very thin layer over the posterior portion of the capsule (Fig 513) Care must be taken in placing forceps as the recurrent laryngeal nerve often lies close to the

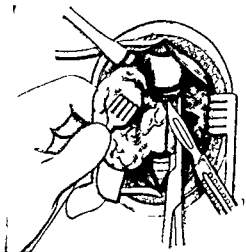


Fig 510—Th thm t ur ly th gh It sse l th
 port f th hm be l f e po t capsul d
 p (1) htly eg () se se f

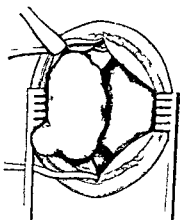


Fig 511—Th l be d d th il ly lf g f rw d
 th ulsell m f cep d h sam m m g h h m dl
 Th bri gs t h l f p se V lsell m f ps t
 h beca se bs ru t g)

sutured as accurately as possible so as to cover the raw surface of the gland (Fig. 514). This is essential in the prevention of oozing and the oozing that is so frequent probably is chiefly from the gland substance. When there is a pyramidal lobe present it must be completely removed otherwise an unsightly mass may develop. I once saw the return of symptom from such a recurrence.

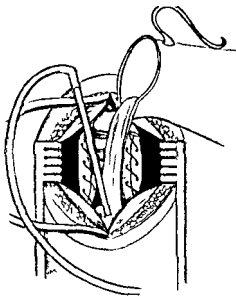
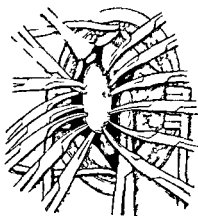


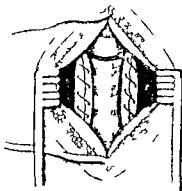
Fig. 515.—The gland is held open by retractors and the wound is closed by sutures.

After finishing the removal of the gland the wound should be carefully washed out and the fluid removed by suction (Fig. 515). In this way many clots are picked up which would otherwise be left and would serve to cause oozing. The anesthetist now lets the patient come out sufficiently to gag. If there are any vessels which have not been properly closed this will open them up. This is very essential in preventing postoperative bleeding and oozing.

capsule Dr Le ter Jone one of my a oc te in a dis ectio
once found it living in groo e in the cap ul For l tin we
use very fne catgut as su e ted b Terry The cap ul is next



Fg 13—Th gl d l b h p d se l g l rv
h l f th l dh t t h c p l A ff t m t f th
l caps l l f t h w f F p m t b pl d
th ca



Fg 514—Th c p l l l po l l h f
so p oo g

should have been carrying. We now use a subcutaneous stitch to unite the subcutaneous tissue (Fig 517) and then put on skin clips. It would not be necessary to put on skin clips in order to secure union but we get better looking scars by doing it.

You noticed I did not put in a drain. I rarely do. We have been studying the question of oozing. When I used drains oozing was present in 100 per cent and I was afraid to discontinue it and then I discovered that the oozing that gives us trouble was not the oozing that was carried off by the drain.

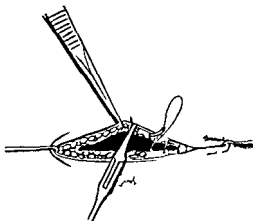


Fig 517—A. Subcutaneous catgut suture placed in the gland. The drain is placed in the gland. The gland is irrigated with a large needle on a Luer syringe.

The drain removes blood from vessels that should have been ligated and serum that exudes because of the irritation from the drain which acts as a foreign body. The oozing that gives trouble starts usually between the third and fifth day and comes from the gland. Since discontinuing the drain and being more careful to secure complete hemostasis we have reduced oozing to less than 50 per cent. When oozing is present it is removed daily with a large needle on a Luer syringe.

The anesthetic used was ethylene. We do not use local

The muscles are closed in two layers (Fig 516) in order to prevent tracheal tug upon the skin. By closing the muscles in this manner there can be no direct line along which serum can drain from the vicinity of the trachea to the skin and along which a connective tissue band could form and cause an unpleasant lifting of the skin every time the patient swallows.

Now I want to show you one of the most important step in the operation from the standpoint of cosmetic results. Visiting surgeons usually get up to go when we start to close and yet

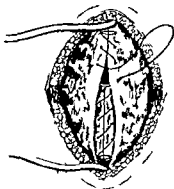


Fig 516—The muscle is closed in two layers so that the head is protected.

we men judge the result of the operation in a later year more by the appearance of the scar than by the relief of the symptoms which they have for often.

Formerly we had a patient in percentage who had thick scars develop after leaving the hospital. We would discharge the patients with very pretty thin lines at the site of the incision to have some of them turn later with thickened edges. I think we have found the cause. We found that the epithelium did not thicken the subcutaneous tissue. The tire laid was thrown upon the epithelium which underwent massive hyperplasia so that the tire was enough to carry the work that the subcutaneous tissue

should have been carrying. We now use a subcutaneous stitch to unite the subcutaneous tissue (Fig 517) and then put on skin clips. It would not be necessary to put on skin clips in order to secure union but we get better looking scars by doing it.

You noticed I did not put in a drain. I rarely do. We have been studying the question of oozing. When I used drains oozing was present in 100 per cent and I was afraid to discontinue it and then I discovered that the oozing that gives us trouble was not the oozing that was carried off by the drain.

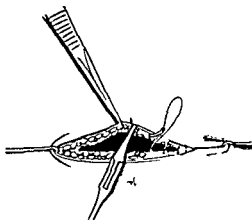


Fig 517—A b t o catg t t t h pl d d t
f th bc t t F l f h bc t eo t t t ec
t t hyp pl f th p th l m d t ca y th l d
Th g ghly sca

The drain removes blood from vessel that should have been ligated and serum that exudes because of the irritation from the drain which acts as a foreign body. The oozing that gives trouble starts usually between the third and fifth day and comes from the gland. Since discontinuing the drain and being more careful to secure complete hemostasis we have reduced oozing to less than 50 per cent. When oozing is present it is removed daily with a large needle on a Luer syringe.

The anesthetic used was ethylene. We do not use local

and the reason for this is that the patient who is the least bit apprehensive is more apt to suffer shock if awake than asleep and secondly, oxygen is more frequent with a local than with a general anesthetic. Ethylene is safe. Our anesthetic is M. I. alk. on is especially trained for use in ethylene. She kept a continuous chart of the vital and diastolic blood pressure and respiration. Here I can see it at a glance.

The after treatment of these patients is an important preventive measure against the operation. Immediately upon returning to the bed from 2 to 3 minutes of local solution will be given by rectum. This is done so that if I have drained the iodine out of the hand by operation and manipulation more will be taken to it at once than the blood stream. The iodine will be given by rectum three or four times a day until the patient can take it by mouth. Then 10 minutes will be given three times a day for one month and once a day for the second month. Following the second month the necessary amount of iodine will be given either by tablet or in the food. This is not medicine. It is a part of the diet. Without it recurrence is apt to take place.

Conclusions.—Recurrence is pseudo and true and for the most part preventable.

1. Making a careful examination before operation including the chest with other laboratory examinations.

2. Early operation before the problem has been produced.

3. Complete peritonectomy, leaving only a very thin layer adherent to the posterior capsule and looking for full retroperitoneal extension and removal of pyramidal lobe.

4. Having the third saturated with iodine at the time of the peritonectomy and kept saturated for the month after the peritonectomy and thereafter for the next few months.

CLINIC OF DR. FRANK HINMAN

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THE SURGICAL TREATMENT OF UROGENITAL TUBERCULOSIS

THERE are two distinct problems in genito urinary tuberculosis that are not appreciated by the medical profession in general. The first concerns renal tuberculosis and the second genital tuberculosis but in practice the two for purposes of proper treatment and cure need to be jointly considered. The prominent characteristics of tuberculosis of the genito urinary tract are also insufficiently realized. The frequency is much greater than one would think unless statistics are studied and the general morbidity is far in excess of the usual superficial estimation. Genito urinary tuberculosis not treated surgically has in fact a higher death rate than pulmonary involvement. It is for this reason that the third characteristic of tuberculosis of the genito urinary tract should be universally recognized namely that whether primarily renal or genital the condition with few exceptions constitute a surgical problem.

Briefly the facts known at present concerning renal and genital tuberculosis are the following:

I. RENAL TUBERCULOSIS

The incidence of renal tuberculosis is better studied from autopsy statistics together with clinical results. Autopsy records show primary renal tuberculosis to be present in from 1 to 5 per cent of cases according to the particular series studied. When there is an active tuberculous lesion other than the urinary tract such as in the lungs, joints, etc., the incidence of renal tuberculosis increases to between 10 and 20 per cent. Clinical statistics reveal that renal tuberculosis accounts for between 30 and 35 per

cent of the cases of total nephrectomy placing the prevalence of this condition above other urologic diseases.

Clinical evidence bears out the fact that except in the cases of military infection renal tuberculosis is unilateral in its origin. Although autopsy record show the condition to be unilateral in 57 per cent and bilateral in 48 per cent, clinical record show the ratio to be 86 per cent unilateral to 14 per cent bilateral. Taken into consideration the wide variety of clinical error experienced in the diagnosis of this condition this ratio seems to be a fairly accurate estimate.

Clinically the cases of renal tuberculosis fall into two groups: (1) Those in which the renal element is primary in the kidney with no evidence of tuberculosis elsewhere and (2) those in which it is secondary and accompanied by active tuberculosis elsewhere. From a strictly pathologic standpoint this distinction does not exist inasmuch as all infections of the kidney with tubercle bacilli are probably secondary to a tuberculous focus elsewhere which may have healed or become masked as to leave no clinical evidence of its existence. Clinically between 60 and 70 per cent of the cases of renal tuberculosis fall in the primary group. It is of these patients that surgery becomes so efficient. Of the secondary group of 30 to 40 per cent those with active tuberculosis elsewhere there are 10 to 15 per cent with pulmonary involvement and 50 to 60 per cent with associated genital involvement. The bladder is involved in between 25 and 50 per cent of all renal cases. Our own group of cases showed 45 per cent of the patients to have cystoscopic evidence of vesical involvement.

Genitourinary tuberculosis attacks and is gradual in the prime of life—85 per cent of cases occurring between twenty and fifty years of age. The clinical picture and course of the chronic process are fairly treatment.

The earliest symptoms of renal tuberculosis originate from the bladder; the patients suffer chiefly from burning and frequency on urination. Hematuria is the next common complaint. Pyuria due to genitourinary tuberculosis is generally characterized by the absence of the common pyogenic

organisms and the fact that bacteriologic cultivation ordinarily gives negative results inasmuch as the tubercle bacillus will not grow on ordinary culture media. It is the exception to find secondary infections with pyogenic organisms. In early cases it is rare to find patients complaining of backache of renal origin or to show general evidence of tuberculosis such as fever, malaise, loss of strength and weight. The majority of the patients are well nourished and in their full vigor.

The Treatment of Renal Tuberculosis—It is the universal belief that early nephrectomy is the method of choice in all cases in which unilateral tuberculosis is found clinically. The exceptional cases in which spontaneous healing has occurred have shown at autopsy to be invariably due to a complete destruction of the renal parenchyma—the so called autonephrectomy.

It is difficult to form an accurate estimate of the results of nephrectomy for renal tuberculosis. The refinements of diagnosis and technic have made a wide variation of figures. In a series of cases recently reviewed the surgical mortality prior to 1910 was more than 18 per cent, as compared to 4.4 per cent since 1910. The statistics are so incomplete that it is difficult to form a definite estimate of the number of patients cured.

<i>R e s u l t s f o l l o w i n g N e p h r e c t o m y</i>		<i>P e r c e n t</i>
Bladder involvement	54.9	
Prostate involvement	21.16	
Genital involvement	22.9	
Secondary genital infection (prior to 1910)	18.8	
Secondary genital infection (after 1910)	4.39	
Death (terminal)	20.2	
Wound infection	58.1	

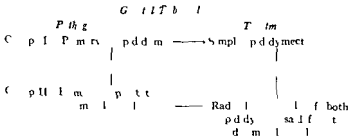
The results following the more advanced bilateral cases have not been so satisfactory. The surgical mortality in this group is very high, many of the cases dying soon after operation from a generalized tuberculosis. When nephrectomy is done prior to an involvement of the bladder, almost 100 per cent of the cases are cured. After the bladder becomes involved, probably less than 60 per cent are cured. The persistence of bladder symptoms after nephrectomy is sometimes secondary to lesions

in the infected ureter. Often in the early cases ureterectomy is indicated. In other cases the involvement of the bladder is so deep seated and the capacity of the bladder is coincidentally so limited that the patient is miserable because of frequency and pain or even the danger from hemorrhage. A still more serious consequence is the spread of the tuberculous lesion about the ureteral orifice and the lower ureter of the uninvolved side. This often causes sufficient obstruction to produce a dilatation of the ureter and a gradually progressive hydronephrosis of the remaining kidney. Three such cases have been relieved of this obstruction and attending misery by hydronephrectomy. The first case showed an increase from 5 to 50 per cent in phenolphthalein output with complete relief of bladder symptoms. The patient was free from symptoms for four years when calculi developed in the kidney pelvis. In reply to the hospital a delayed and the patient was practically incontinent when nephrolithotomy was done. The activity of the kidney never recovered and the patient died of uremia one day later. At autopsy the kidney which had drained for four years into the rectum was free from tubercles. The second case lived comfortably for two years dying in the Emergency Hospital of acute bilateral pneumonia unrelated to the tubercles. The third case is living and well ten years after operation with good renal function and excellent control of the urine. This patient was able to resume his work after having numerous alarming hemorrhages from the bladder which were not relieved by low irrigation.

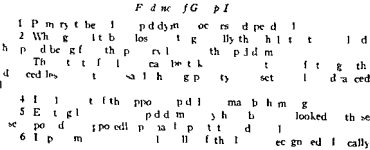
II GENITAL TUBERCULOSIS

Genital tuberculosis presents one marked similarity to renal tuberculosis in that it is frequently curable. The prognosis in the genital tract—no absolute indication for bilateral orchiectomy. B. never attacks the testis 44.2 per cent of fully studied cases are primary. Out of a group of 100 cases 37.4 per cent to be primary and the balance to be secondary with tuberculosis elsewhere. In the male 5.7 per cent of the prostate is involved up to the age of 60. In the female 11.1 per cent of the uterus is involved.

for renal tuberculosis. Careful analysis of the statistics both pathologic and clinical supports the premise that renal tuberculosis begins in one kidney and that bilateral infection except in military cases is invariably a late manifestation of the disease. Nephrectomy thus effects a cure by preventing a spread of the disease to other parts of the tract but the application of this principle in the treatment of genital tuberculosis meets with decided opposition because of the marked difference of opinion as to the probable site of the primary lesion in the genital tract. Two schools have arisen the one regarding the primary focus to be the epididymis the second regarding the initial lesion to be in the prostate or seminal vesicles. This dispute has created two distinct problems in the diagnosis and treatment of genital tuberculosis—one with respect to its pathogenesis and the other to treatment the latter being largely influenced by one's views regarding the former. This controversy may be summarized by the following diagram



The argument of each school might well be considered in outline form



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p d dymect my

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l f f th p d dym (J D ll g B)

Evid ne f G or p II

Cl l—1 T be l p d dym t l

2 Cl cal vid ce f th p se ce f t b l th seru l des
pro tat gr by th p ese f od les th t d f de se
h p d dym m f q t

3 Sympt m f e cul p t t ft p ced th ppe
f t be cul p d dym t

4 Wh ev th p d dym l ed th t be l th al
l th gl b m d l g t t f ct kn t
se by f m th th Wh th d sease p d th pp
p d dy th gl b m lso first l d F m h gl b m
t p d th body d gl b maj l th d cy t b cul
p d dymut h 100 p t l ment f h gl b m

P th logic—1 L f th p d dym l ly f d

pe h rea t b re l l f seru l e l d p t t
mpa ed by l th p d dym f eq tly po ed

Wh th d ea l e th h l g l tra t th l th
sem l cles d p ta g rally h th pp ra f b g m
d ced d ld

3 L th gl b m f th p d dym ppea ld d m
d d han those f th body gl b m j Th po t th fi t
sof d b eak d w

Exp nt l—1 M o-o ga m p t dl b bed f m th
hra d carr d th ep d dym

T be l p d dym t h be p od ed p rimentally by
j g th p d dym d th l t g th thra Th g m ea
t l by ay f th l m f th h gh tpe t l by y f th
l ph es f th a (K M W lk)

Th abo lin freason n_o ha e exi ted without much m d n
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h ld t Bru el (1924) G nut l Tuberculo a th m n ub
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Gr up II by K n th M Walk of Lo d n While dmitt
th t th f t p ented by tho e who a gue f r the primary
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to cons l r th fa ts ind cating th m l l d p t te
as mo e p babl p mary t b tl m l l H gh H

Young has given this subject careful study for many years and has long been convinced from his clinical and surgical experience that the seminal vesicle or prostate is the primary focus of localization in the great majority of cases and it is because of this belief that he has advocated radical methods of treatment.

The statistics as to the incidence and extent of tuberculosis of the genital tract are rather unsatisfactory. In the first place genital tuberculosis is not nearly so frequent as renal tuberculosis; the incidence averaging 0.5 per cent as compared to 1 to 5 per cent in renal involvement. The high proportion of primary cases reported (Barney 44.2 per cent, our own series 39.4 per cent) make it seem probable that autopsy studies of these cases would have revealed healed or hidden active lesions elsewhere. The average of various groups of statistics show the secondary cases to vary between 40 and 83 per cent with involvement found most frequently in the lungs and the urinary tract. The statistics from sanatoria are very incomplete as far as urologic records are concerned. They show that pulmonary tuberculosis is cured in from 65 to 70 per cent of cases whereas in the small group complicated with genito-urinary lesions the percentage of cures falls to 20 per cent. Briefly the morbidity of properly treated phthisis is 30 per cent whereas when it is associated with genito-urinary tuberculosis the morbidity is as high as 80 per cent.

The extent of the disease in the genital tract varies markedly which would be expected in view of the difficulties of diagnosis. Simple epididymitis has been clinically reported in only from 10 to 15 per cent of cases. Involvement of the seminal vesicles alone shows an incidence of from 15 to 20 per cent. Lesions in both have been found in 65 to 70 per cent of cases. It is important to note that these same statistics show an associated lesion in the kidney in about 50 per cent of all cases.

The initial or early symptoms of genital tuberculosis are not nearly so definite as in renal tuberculosis. The commonest finding is epididymitis evidenced by nodules which seem invariably to involve first the globus minor. The globus minor shows involvement in 100 per cent of cases; the body of the epi-

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3 D d

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(2 f th 6 h h d ph t m)

S mm y 12 case f ll d

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6 dead

3 t t d

3 t t d

G p 2 C B h h S m l l l Shou d E d f Im l m l
Cl lly—U t t d T t d by S m pl Ep d d y m t y

T t l ca

17

5 C t t d by p d d y m l m

4 B l t l h w g d c f b l t l m l l t

1 R ght d l h w g d f b l t l m l l t

2 W ll

2 Poo l t (w th ry good sa t m t t m t)

1 D d d y p t p e t f m b l m

12 C t t e d g lly

10 V l l d b l t lly

1 R ght l l d

1 L ft l l d

Ep d d y m l d

4 B l t lly

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8 L t f m b r v t (4 f th p bl beca f w d

p d t be l d 2 th h d t p lm y t be

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G p 3 C f Wh l T t G t l T b l T t d b Rad l

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T t l

13

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1 D d th k p t pe t ly th t be l

1 D d y ft pe t f g l d be l

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m th ft p Th th th d p t l p t t my pe

f m d ll h d m ll h h pe df t m b wh h ly

h l d

It is of course impossible to make any rigid comparison of the three groups of cases. The 13 cases treated radically showed much better results than those treated by simple epididymectomy or untied but it must be remembered that 12 of these cases were clinically free from tubercular involvement elsewhere. From the results of the 12 cases of Group III we believe the radical operation to be advisable where the seminal vesicle is involved clinically and there is no evidence of active tuberculo elsewhere as in none of the cases in Group II in which the vesicle were involved but untied has the improvement been as satisfactory. In cases of Group III in which the lesions were radically moved surgically. We would prefer the seminal vesiculectomy in the group of cases with clinical evidence of tubercular epididymitis alone (Group I). Many of the cases may show evidence of tuberculous seminal vesiculectomy late and seminal vesiculectomy can then be performed. One principle led to the conclusion that all cases of urinary and genital tuberculosis should be kept under observation for many years after the initial diagnosis and treatment.

The clinical record of genital tuberculosis is still

an easy matter. Many subacute or chronic cases of non tuberculous infection are difficult of differentiation. Nodulation is a prominent characteristic of the lesion but some non tuberculous lesions are also nodular. Because of this difficulty we have made it the rule to perform epididymectomy first and to have an immediate pathologic examination made before proceeding to remove the vesicles. All of our 13 cases of radical removal have been confirmed by microscopic study.

CONCLUSIONS

Genital and renal tuberculosis occur associated with tuberculosis elsewhere and as a primary lesion unassociated with active tuberculosis elsewhere.

Renal tuberculosis at onset is unilateral and the best method of attack is by nephrectomy. Nephrectomy should have the precedence in unilateral renal involvement associated with active genital lesions.

Vesical tuberculosis may remain the only active lesion following surgery in both renal and genital case. Where this is so advanced as to render life miserable because of pain, frequency and incontinence and where there is no active tuberculosis elsewhere, temporary nephrostomy with permanent ureterostomy may give relief and prolong life.

There are two clinical types of genital tuberculosis: (1) Where the more advanced or only lesion is in the epididymis; (2) where the seminal vesicles are involved with or without the epididymis. When unassociated with active lesions elsewhere the indication is epididymectomy for Type I and the radical operation for Type II.

With active lesions elsewhere the indications for surgery depend upon the extent of the associated involvement as compared with the genital or urinary involvement.

After treatment of whatever type all cases should be kept under control and observation for an extended period of time and all of the known clinical methods in the treatment of tuberculosis such as rest, feeding, tuberculin, sunlight, etc. should be used in conjunction with the surgical procedure.

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URETERAL CALCULUS

T f t t h g th m m g ma d ma th ty
y f g y g h w p t d ga l o t f
th m l f t th right t Aft a d t w l d th t
th t t m d d h y pt m t d t k l t
th ght k l y w f d Th p m l d f th u t w f t d
t th k th l d f th k d y Th w d h d d
t gul l h p t y g At t m th
d l f f w d y d th b k p d l h g ll
m t f p th l f H h l th h be f t l th l t t k
S th h h b h g h t g p th pl Sh h b
f d t b b l p a t f th t m Sh h l t som w ght th l t
t k Th t f th p l h t y q t mp rt t
P t f d g h xam t th Pl 98 bl d p
10/90 p lp bl th d d lght g l ty f th h t Th
ll t d m t th l l f th f m ght k d y
h h d g p Th g l xam t h t d m th
lt f th g th g t d Th h w m be l
f l f at th g f th l d f tl ght t lt m
pos bl t pa th t p th p h t A th t p se f h
pp d f th t th d p y d w th l t t t t t
p ll t h h t t f th t t l d W
l l th t l l g h m t d t th l l f th ght
t th tw l f th g

The scar tissue from the first operation in the vault of the vagina makes it hazardous to try to remove the stone through the vaginal route. The stone being located so near the bladder orifice it will be a little difficult to remove the ureter and stone through the extra peritoneal muscle splitting incision so we will make a right rectus incision of ample length. We find the ureter very readily and mobilize it from the rim of the pelvis to the bladder. Here we find our stone impacted in the lower end of the ureter. We shall slip that stone back up the ureter a

short distance. Now we have it well above the bladder. We now double clamp the ureter below the stone and cut the ureter between the two clamps. We shall cauterize both ends of this ureter very carefully and ligate both ends with chromic catgut. We shall mobilize the ureter as it runs under the ovarian vessels and behind the cecum. We shall free this ureter well up to its point of attachment to the abdominal wall. We are now closing up the peritoneum from the bladder to the cecum. Before we do this however we shall provide for drainage in this location. Retroperitoneal space does not stand infection well and there may have been some soil if the wound by our manipulation.

Although we have been very careful and have cauterized both ends of our severed ureter. To be on the safe side we shall leave

drain in the place where the ureter has been removed. We shall place our drain in the way—place one end of a long cigarette drain next to the bladder. Tie the upper end of this cigarette drain to the lower end of the ureter. We now have our drain back of the peritoneum and suture the entire peritoneal wound from the bladder to the posterior side of the cecum. The upper end of our drain and the entire ureter lie in the pocket behind the cecum but entirely intraperitoneal. We shall close the abdominal wound without drainage.

Now we will turn on patient's left side and mobilize the proximal end of the ureter. This is the fistulous tract that has been draining for the last ten years. This you see is very red and inflamed and as we pull out the ureter we bring with it the upper end of the cigarette-drain. We shall leave this drain about ten days. At the distal end of the ureter whose wall is extremely thickened and ligated is the stone as large as a coffee bean. Later this patient made an unexpected recovery and went home completely cured.

PLASTIC OPERATION ON PENIS

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Fig 518—Th d d d pe d w th gh th t m d t d
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pe th wa k d b g d t h g f m th b W m ed th
 t k f th pe d l po t f th b d k th p b
 g d ly d th l t th b f th p A th pat t
 h d ry p d l t d pl ty f pl kin t l d th
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 J ry 2 1924 Th mp y g l l t t (Fg 518) t
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 J 5 1924 th k f th m loose d d th h p
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 t h t t m t l k F t t ly th ma h d m h f d t
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 f g f th t t l

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APPENDICEAL ABSCESS OVERSHADOWED BY EPILEPSY

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 h oc d S th h h h d h ll d f f ll w d b p f
 persp t ev ry ght O t h m pl d f d d pot
 b f h y Th w m p l p t t f th heat t ght Sh
 pot th t wh h w t k k y g w th p th b d m
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 W h ll m t th h f h t t f th phy c l m t
 Sh look d m H rs d y g t E p t f
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 pe l f d g th h t Th p l t w 92 th r w the
 heat wa g t Th b d m h w d masse d t d
 O th b k h w l ght t d t p l p t th ght de
 f m th t f th l m t th tw l f th b O f t p t w
 p wh h d t d d th d f th th gh R l w q l
 d t P l xam t w g t R p e t e d W m f
 blood d p l f d e g t Ray f th h t d f th k d
 gat Ray f th head d t l g m g t
 C ll t f m th p l f d a g Th m ul

every few weeks had directed the attention of the observer to the ritual
 t r s H eu lgia h d ggested th poss b l ty f l t m g t
 Beca se f th pa d tend m ss in th ght l th diagnos f per-
 ph t bsces h d bee co d ed by l g t

The patient reported a temperature of between 99 and 101 F almost constantly for several months. We believe this patient originally suffered from acute appendicitis which was unrecognized by the physician who saw her first and gave her a hypodermic of morphin. We propose to go through the loin and drain a retrocecal appendiceal abscess. We predict that we shall find colon bacillus in this abscess for the following reason:

Originally she had a typical attack of appendicitis was in bed eleven days, got up but suffered more or less continually for the past year with pain and soreness in her right side. The month after her original attack she had convulsions—Jacksonian type of epilepsy. These came every few weeks and because of them attention was directed to the brain. These convulsions have so overshadowed the original disease (appendicitis) that the patient has been unable to impress the observer with a lump and tender mass in the right loin. This mass as you is obvious and the rigidity is marked over the right loin.

We shall now make an incision over this tender mass and we find quite a quantity of foul colon bacillus pus. We shall put in drain. We have not opened the general peritoneal cavity. This is not a very large abscess although it has existed here for one whole year.

Can we explain this woman's epilepsy from these findings? Possibly although we are not certain the convulsions may be due to a chronic toxemia produced by this abscess. She may have a metastatic abscess of the brain which may have a tumor of the brain or this epilepsy that she has may be due to something entirely unrelated to her original disease—appendicitis.

Lateral autopsy showed a large gumma in the motor area of right cerebral hemisphere.

CLINIC OF DR EMILE HOLMAN

FROM THE SURGICAL CLINIC OF THE STANFORD UNIVERSITY
MEDICAL SCHOOL

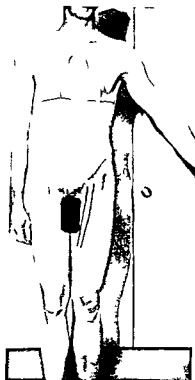
ARTERIOVENOUS ANEURYSM

AN arteriovenous aneurysm or fistula is characterized by certain physiologic phenomena which make it one of the most fascinating and unique lesions in medicine. The following cases are presented as illustrative of their physiologic effects upon the circulatory system and of the principles underlying their surgical treatment.

C L.—A Am ca lumb ma g d th rty y dm tt d
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t ung th d Sh tly ft th j ry h ted th ll p lpat
th l ft thgh wh h h b t ly p se t th t t m f
th yea t rv g th d t h h d b se by mbe f
d ct b t n h f gg t d y l t b tw th
d th l t f th thgh tw ty f y g l th m th
p eced g dm h h d t d ll g f th l ft l g t th d f th
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p ed by g d ll w ght d t gth A w ll m k d dy p
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th gh 504 O d g th f th l l g th l ft q



F g 19—D l f heart d rt ry p ximal h fi l
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d sc l rat fl e l g d ar se

p m d th cumf f b calf eased f m 36 37 m
Th a mall healing lce h p ct f h l f l w l g d
th l leg in t d tal h lf h ed th m k d m tied b n h d
col ratio so chara t ist f prol ged g g m d
O th m pect f h l f h gh h lf ay b twee h pa ll d
h gr in a mall ecta gul sc h h m k d th f h g l

l t T m l t l t th sc. l d b f l t g l y p l s a t g
 f m l t r y w h h p a l p a t s e m d t b t w th f t h g h t
 f m r a l t r y Th d i t t t d e d f b o P p a t l g m t
 l d f l - t h t l l b g g t l l g d Th p l a t
 th b d m l r t w l l y f c o j l y p m t t t h

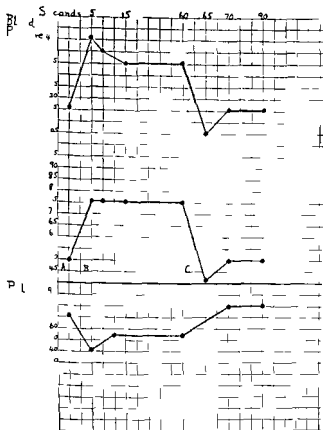


Fig 520—V t g l blood p d p l l g d
 pen g th f t l l F t l p B f t l l d b d g t l m
 P C f t l p e

point wh t d s a p p e a d d th t m The p l a t
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 b e l th s c b t t d g l t l l f 15 m d p m l l y f th

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 popl l pa Pes th f ma m m th ll ca sed th thru
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 160/60 gh th gh 165 60 l ft th gh bel h f i t l 100/0
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 d pped t 106 ec ring mmedia ly t 116 P rall l ha ges oc rr d
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 sev l beat main g t 5 1/2 pe min t l g th f i t ul as l sed
 On p g th f i t la th t gam ea ed t 80
 Th xam t f th heat ealed ma kedly xagg rat d p ec dial
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 pex be t l d b l l in th h t pa l cm t d th ppl lun
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 and 16 m t th l ft f th m d l A l d yst l m m ould be h d
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 fl sc p xamin t led la g d heart th co tra t f
 wh ch ppea ed b b m lly creased vig and mph d Th
 t la curs seemed t b eased in d p h d f q y Cl s
 f th h t la ca sed h heart m m tarly t in ease m co d t
 w th th rema kabl f ll in p lse t d in se blood p ss Th
 m menta y increase in h f h heart a f ll d by d m t
 lea t 3 mm m ll b h u z wh th f i la pe W h
 th f i t la l sed h lso d f i t ly d m h d g f ct
 A t leo oe g og h d h ca d mea m be f ll w
 Right tra rse diam 57 cm l ft t se d m 102 m b
 l q diam t 178 m aort d m 59 m (F g 5 t)
 An xamin t f h in by ph h lm l g t y l d d h
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 m tabol f —12 pe co ded h l mp be g
 346 cal pe ~q m t pe h mpa d heo cal cm l
 co pt f 39 l cal pe sq m pe h Th W se m
 t g e

O Sept mb 28th th p t w p t d p u d th
 th At m q t w t sed Th f l w l w p d d
 l t d p lly d d t lly t th p t f mm cat P m l
 t th f t l th t y m u 121 m diamet dth m d
 26 m d m t D t l t th f t l th t r y m d 0.65 m d
 th 15 P m lly th w th k d t r l d d r y
 d sely dh t t th t r y so t t t th t l d t l pa t d A
 p i g t 4 mm b d ppl d t t t r y d p malt



Fig 521—S f heat A B f p t B m d t l f p
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 th h t mm d t l y f t l f t f t l

th f t l th l d t l t th f t l w l g t d sep t l d
 seg t f t r y d b t 6 m l g t gth f t l w sed
 Th l p m t d f l w d p g b t w th
 r t r y d w h m d o b y 7 mm d m t Th r t r y th
 t t d p m m d l m d m mp d t d m t
 th l g t t f l m l m y b f d h f th t th f t l
 th l g t a m d pp mat l 12 by 14 m Th l t l d
 f th d d d t p h a t g t th d f th p t d cat g
 d q l l t t th l m b y d th f t l At t m
 f p t w h y d f p i cult t th f t

Th d as l sed w thout d nag Th p l t th d f h t o-h
 pe t wa 60 Th p ly d lat d h t m gr th y d
 t ded mm d tely ft th p rat (Fg 51) Th t mporary
 d t t d sappe d by th th d d
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 d bl pa d d ss g l d g tly ll th gh w th so blood
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 gre t d l f blood-cl t a m d b k rt l bleed g a f d
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 a l gat d d th d aga l ed th t dra g F d y la
 th pat t ga mpl ed f pa th th gh d xam t l d
 p m t w d th fil t d t d ss f th t f th
 th gh Th d g pened d gr anesth d p w f d
 l d g d n t th t mp f th go ly beat g p m l t ry h h
 l y bath d p Th pre ted t d ly d fficult p bl m
 Th f bly beat g rt ry ld ta ly b rst pe eco d ry h m
 h g f t w ll ed t t b g se f p L gat f th
 mm f m ral rt ry p mal t th p f d f m is mght lead t
 ga g f th l mb O l h pe l l gat g th f ral rt y
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 t f l l g mpl t h g f t bl g n d gl es Th d
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 Sl b t mpled ated h l g oc rred d th pat t l ft th h
 p l t th lat bject ly ry h mp d C rt pa
 th l f h t wh h h h d l y t b ted t l d f t f b h d
 t ly d sappe ed h bea t f l t ry m h m l t th b f d
 h h m l f t d gr d l d th f th p lsat g t r
 th l f gr
 E d sch g l d m k d d t pec d l
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 gr t dec ease ca d d l ss d t leo tg g mg h f l l g
 ca d mea m t Rgh t rs d t 41 m l f tra se
 d m 95 m bl q d m t 151 t d m 56 (Fg
 51) O l t h sy l m m h h d b f th
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 th ref b d f t ly soc d h th m k d d t f th h
 Th b rm lly p t p lsat f h bd m l rt h d l
 d sappe red Th d sal p d d po t b l t th l f
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 f th e f th l f l g h d l sapp d d th l h l l
 had h led

Comment —Bl d pre r a id P l Ob r to —B to
 operat on the general blood pres ure e ded in th a m v as
 con tently ar u d 120 systol c and 52 d a tol c w th p l e

pressure of 68. Seven hours following the excision of the fistula the systolic pressure was 134 diastolic pressure 96 with a pulse pressure of only 38 (Fig 522). Eighteen hours after the second

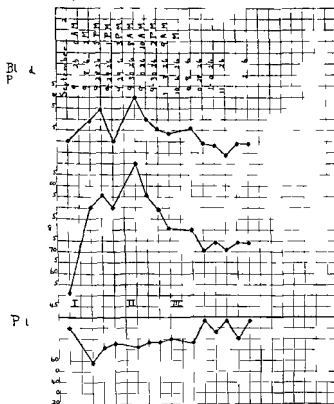


Fig 522—Fl t t g l blood p f l l g f
 fitl Th l l t t th d gly hgh y t l d d t l p
 wh h p e v l f h d d y f l l w g th l m t f th f i t l a
 bef th t t l blood l m e ad j t d t th b s c f th f i l by
 d t m t l m I F t p t f f th f i t l II
 Se d p t f l g t f f m l t y III Th d p e t f
 l g t f p e f i l f m l r t r y j t b e y d b h g f p f d
 f m

operation for r l ation of the femoral artery the systolic press ure rose to 140 and the diastol c pressu e to 110 a pulse pressure of only 30. A gradual eadjustment occurred within the next

Th d w l sed w th l d nag The p l t th d f th t o h
 pe t wa 60 Th p ex ly d lated h rt a m greatly d
 t ded m m d t ly ft th perat (F g 5 1) Th t m p rv
 d t t d sappea d by th th d d y
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 d bl pa d d ss g l d greatly ll th gh with som blood
 oo g f m th U d g th w th d a eo pe ed d
 gr t d l f blood-cl t a m ed b k rt l bleed g w f d
 t be g f m th t m p f th greatly d l ted p oumal rt ry Th
 a l g t d d th w d g l sed w th t dra g F d lat
 th pat t g m pl ed f pa th th gh d xamun t e vealed
 p m t w d w h fil t d t d f th t ss f th
 th gh Th d g pe d d g a esthes d p a f d
 l d g d w n t th m p f th g ly be t g p mal rt ry h h
 l y bathed in p Th p se t d tra d ly d fficult p bl m
 Th f bly beat g t ry ld rt ly b t p eco d ry h m
 h g f t ll d t t beat g f pu L gat f h
 m m f m l t y p mal t th p f d f m m ght l d t
 g gr f th l m b O ly h p ly l gat g th f m l rt ry
 j t d l t th b h g f th p f d Th d th gh
 se d tra th g un mad d t tly sep p eca
 t f ll ang m pl t h g f tabl g n d gl es Th d
 f th e l pe t th p d d ly d th ghly d k d
 f pe od f l eek A cul post f S phyllococci lb
 Sl b t m pl t d h l g oc rr d d th pat t l f th h
 p t l t m th lat bjec ly ry m h m p ed C rt pa
 th l ft h t w h h h h d l y tt b ted t l d f t f b h d
 t ly d sappea ed h h t f ft ry m h m q h b f d
 h h m lf t d gra l l d m h f th p lsa g rt ry
 th l f gr
 E m t d sch g l d ma k d d p ec d l
 t ty mpa ed t th ca d t bef pe t Th
 gr t dec ca d d l ss j leo oe tg gram ga h f ll g
 ca d mea m t Right t d m t 4 l m l ft t rs
 diam 9 5 m bl q d m t 15 1 m rt d m 5 6 m (F g
 521) O cul t th y t l m m h h h d b p h
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 th f b d fi ly s t d w th th m k d d l t f h h t
 Th b rm lly p m t p lsa f th bd m l rt h d l
 d sappea d Th d sal ped d p t b l th l ft
 co ld be ea ly f l d th f h l m b a ll Th f l ss
 f th f th l ft l g h d d pp d d th l h l l g
 h d healed

Comment—Bl d pre d Pul Ob r t o i s Befo
 operation th ge ral blo d p u e a rded in th s
 cons tently around 120 vst l c and 52 d astol w th a p l e

pressure of 68. Seven hours following the excision of the fistula the systolic pressure was 134, diastolic pressure 96 with a pulse pressure of only 38 (Fig. 522). Eighteen hours after the second

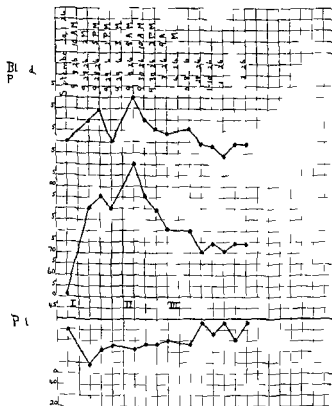


Fig. 522—First blood pressure following excision of the fistula. The first blood pressure was 134, diastolic pressure 96 with a pulse pressure of only 38. Eighteen hours after the second operation for resection of the femoral artery the systolic pressure rose to 140 and the diastolic pressure to 110, a pulse pressure of only 30. A gradual readjustment occurred within the next

operation for resection of the femoral artery the systolic pressure rose to 140 and the diastolic pressure to 110, a pulse pressure of only 30. A gradual readjustment occurred within the next

Th d was losed to thout d nag Th p le t th end fth t v-hour
pe t a 60 Th p ev ly d lated hea t a even mo greathly d-
t ded mmeduat ly ft th pe t (Fg 51) Th t mpora over
d tent d sappea ed b th th d da

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oo g f m th U d ga esthesia th w d w reopened and
great deal f blood-cl a m ed b ask rt ial bleeding as found
t be com g f m th t p f th greatly d l ted p ximal rtery Th
lg ted d th w d g losed w h t dram g Foo day la
th patent ga mpla ed f pa th th gh and an xaminati re-tale
p mun t d h fil t and tend rness f th tissues f t-
th gh Th w d as g pened d ga esthesia and p was found
leading d n t th t mp f th g ly beating p oximal rtery bth
ly bath d m p Th p esented extr dinarily difficul p blea
Th f bl bea g rt ry w ld rta ly b t pe m seco dary hemor
h g f t w ll ed t t beat g sea f po Lg t f th
comm f m ral rt ry p mal t th p f d f m ras might lead
gangr f th lmb Our ly h pe lay m ligating th f mral art ry
j t d stal to th b hing f h p f d This wa d h gh
seco d t sv ca m h gr m mad d rictl asept preca
f ll ung compl t h g f tabl g n d gl es Th ound
f th ngual perat th pe ed d ly d th ghly dakimized
f period fsc l w ks Acult po f Staph lococcu b
Sl b mplica ed heal g occ rred d th pat t f th hos-
p tal t m th la bject ly ry m h mp ed C rtain pa m
th l f hest h h h h d l ys t b ed t l d f re f b had
t ly d sappea ed h heart f l ry m h m q t than bef d
h h self ed grad l d nu m th f h p lsati g rt ry
h l ft gr

Examun disch k eal d ma ked d m: p eco d al
ty compa ed h ca d ct bef pe Th re as
great dec ease ca dia d lness d t leo oe g ogr mg th f ll ung
ca dia meas m ts Right se diam 41 m l ft rse
diam 9.5 cm bhq diam 15 f m rt diam 6 (Fg
521) On scultat h sy li m mu h ch h d bee p ese th
p eco d m bef pera a l g d l Th m rm ma
th f be d f ly associa ed h h ma ked d lata f th heart
Th b mally p mu en p lsa f th bd mu l rta h d rel
disappea ed Th d sal: pedis d po t bial rt h l f
could be eas ly f ft d h f h lmb a cellen Th f l e
f th m f h l f leg h d d sappe ed d h lce h l l g
had healed

C mm nt—Bl d p e su d Pul Obser t, —Befo e
ope at on th gene al blood p s u e rded m the m wa
con stently a ound 120 s t l c a d 52 d tol with a pul-e

observations recorded in Fig 523 show. The permanent elevation in diastolic level is the direct result of eliminating the large area of decreased peripheral resistance introduced by the fistula. The marked temporary elevation in systolic pressure which appeared within a few hours of the operation requires another explanation which is to be found in the physiologic

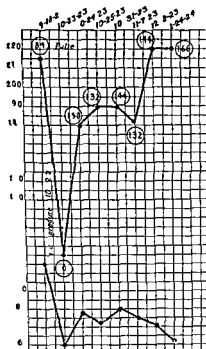


Fig 54—Fistula blood pressure with fistula. The graph shows the blood pressure (systolic and diastolic) recorded during the operation and the subsequent period. The pressure drops sharply during the operation and then rises and stabilizes at a higher level than before the operation.

factors controlling blood pressure. The establishment of a fistula between the arterial and venous systems results in the short circuiting of a considerable volume of blood directly back to the heart, the volume depending on the size of the fistula. This short-circuited volume of blood is lost to the rest of the body

few weeks and when finally stabilized the systolic pressure again lay around 118 the same figure as before operation but the diastolic level was permanently elevated to about 76 with a pulse pressure of 42 as compared to a preoperative pulse pressure

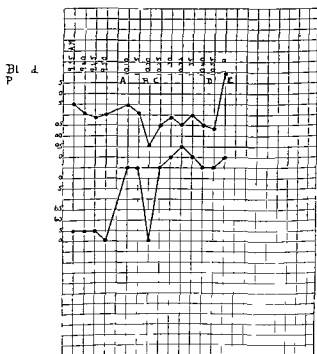


Fig 53—Mixed blood pressure during the postoperative period. The graph shows the systolic and diastolic blood pressure over a 30-day period. The systolic pressure remains relatively stable around 118 mmHg, while the diastolic pressure shows a significant increase from 72 mmHg to 76 mmHg, indicating a permanent elevation. The pulse pressure (systolic minus diastolic) is 42 mmHg.

value of 68. This decrease in pulse pressure is a dominant feature of the clinical picture which occurred at the postoperative stage immediately following the elimination of the tumor.

observations recorded in Fig. 523 show. The permanent elevation in diastolic level is the direct result of eliminating the large area of decreased peripheral resistance introduced by the fistula. The marked temporary elevation in systolic pressure which appeared within a few hours of the operation requires another explanation which is to be found in the physiologic

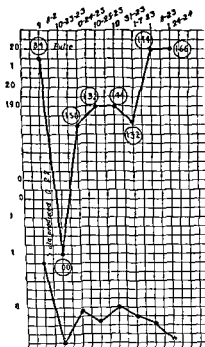


Fig. 524—F. t. c. t. b. l. o. d. p. d. g. f. i. t. l. t. h. p. e. m. t. l. m. a. l. h. p. p. o. t. f. t. h. s. e. t. e. d. h. t. h. f. i. t. l. i. m. t. d. l. y. p. e. t. l. g. f. d. t. l. p. d. t. p. o. y. f. i. l. y. l. p. T. h. r. y. f. h. y. t. l. p. u. d. t. n. s. e. t. t. l. b. l. d. l. m.

factors controlling blood pressure. The establishment of a fistula between the arterial and venous systems results in the short circuiting of a considerable volume of blood directly back to the heart, the volume depending on the size of the fistula. This short-circuited volume of blood is lost to the rest of the body.

so far as the maintenance of blood pressure is concerned and experimentally it has been shown (Fig 524) that the production of an arteriovenous fistula is followed immediately by a great fall in general blood pressure. A gradual recovery in systolic pressure occurs a recovery due to an increase in total blood volume equivalent to the amount short circuited through the fistula. The volume short circuited depends of course upon the size of the fistula.

When the fistula is again eliminated from the circulation the volume of blood formerly flowing through the fistula and the shorter circuit must perforce pass into the general circulation distending all the vessels of the body with blood. The immediate increase in blood pressure is due therefore not only to the elimination of the area of decreased peripheral resistance but also to the filling up of the normal circulatory system with an excess of circulating fluid.

This filling up of the normal circulatory system is only temporary and is manifested by a transient dilatation of the heart, an excess of the dilatation already produced by the existence of the fistula. In a previous communication it was shown that immediately after the elimination of a large femoral fistula the heart was even more greatly distended than before. The overdistention subsided within twenty four hours. In the present instance a very similar temporary postoperative dilatation occurred (Fig 521) which subsided within forty eight hours to the preoperative size. This observation is of the highest importance. Unexplained deaths have occurred immediately following the operation for the removal of a fistula and these may well be the result of an excessive cardiac dilatation. Measures to prevent such an overdistention may occasionally be found necessary should circulatory failure seem imminent following the excision of a fistula. Obviously measures would be the general removal of blood by venesection since the persistent and dilatation are the direct result of diverting excessive volume of blood into the normal circulatory channel by the elimination of the fistula. Intentional cardiac dilatation of the heart of the circulatory system prevents the postoperative

before operation by the observation that the vessel of the retina and optic disk were obviously larger when the fistula was temporarily closed as compared to their appearance when the fistula was open.

Following operation there is a gradual diminution in the volume of circulating fluid. The general blood pressure falls (Fig. 522) and the heart gradually shrinks to a normal size (Fig. 521). The first reduction in volume of circulating blood is probably due to a diminution in the plasma volume with a resulting concentration of the cellular element of the blood. Evidence of such a regulatory process was obtained in this instance by a study of the cellular elements and of the chemical elements of the blood. The unexpected bleeding into the wound and into the tissues during the first twenty-four hours after operation from the incompletely ligated femoral artery somewhat interfered with the studies but the following observations are suggestive of a concentration of the blood following elimination of the fistula.

On September 19th when the patient entered the hospital a hemoglobin of 70 per cent was present with a red cell count of 5,000,000. On September 28th eight hours after the elimination of the fistula by operation the red cell count was 5,990,000 and the hemoglobin 112 per cent. Twenty hours after operation a red cell count of 5,840,000 was noted with a hemoglobin of 108 per cent and twenty-four hours later most probably due to the hemorrhage into the wound the red cell count had dropped to 4,400,000 and the hemoglobin to 86 per cent.

Similarly the total blood chlorides just preceding the operation were 470 mg. per 100 c.c. of blood. Two days later they totalled 445 mg. and three days later 471.8 mg. following which they again returned to the preoperative reading. The evidence is admittedly meagre but it suggests a temporary concentration of the cellular and chemical element of the blood through a reduction in blood plasma.

This patient also presented a startling neurologic phenomenon. Whereas vision in the right eye had been practically absent for fifteen years (the fistula having been present twenty

four years) within five weeks after the elimination of the fistula vision began to return and a letter from the patient six months later stated that the vision in the right eye was as good as that in the left eye. It is difficult to state what association if any exists between the loss of vision and the lowered diastolic pressure the latter being the only altered factor which could possibly have affected the eye. The sudden attacks of dizziness and weakness noted in the erect posture were probably dependent upon cerebral anemia. Could diminished arterial supply account also for the dimmed vision?

In a previously described instance a gradually increasing demineralized scleritis developed simultaneously with the gradually increasing circulatory difficulty due to the presence of a large femoral fistula. It was felt at the time that the two conditions probably existed quite independently of each other but the presence of a neurologic phenomenon under similar circumstances in a condition tan certainly suggests a probable relationship between the two conditions. Both patients presented in the erect posture the unusual attacks of weakness and feeling faintness without loss of consciousness, the one falling to his knees and the other to sit down precipitately in feeling lightheadedness.

Cas. II.—A young girl fifteen years old Lan. Hospital March 30 1912 and half month later, July, right thigh caesed by small penknife. At the moment of injury the was great high blood and about a pint of blood was lost from the femoral artery. The blood pooled in the thigh and the leg. The blood could be applied by the finger. The wound was covered with a bandage and the right thigh occurred. The blood immediately became greatly swollen and the right thigh appeared very black and discolored. The tenderness and stiffness of the thigh kept her in bed for two weeks. During this time the swelling greatly diminished and the appearance of the thigh was much improved. The middle of the thigh was described by the doctor as a large tumor gradually became large in size of the middle and the thigh became stiff and the patient was so high for the medical advice. A lump had been present in the middle of the thigh for a long time. The lump was a large cystic mass.

Examination of the affected leg revealed the anastomosis of the right thigh 9 cm below the level of the hip joint. The diameter of the artery was 2 by 3 cm. in diameter. The blood was anastomosed to the femoral artery. The

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Fg 525—T l tg g m Ca II A D f t d l t t f
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Operation—The femoral artery and vein were isolated proximal to the fistula and controlled with a tape ligature. The artery proximal to the fistula measured 8 mm in diameter, the vein 9 mm. There seemed to be no difference in the size of the artery above and below the fistula.

The opening in the artery did not enter the vein directly but entered a large false sac which was located in the soft tissues below the sartorius muscle. This sac measured about 4.5 cm in

diameter. From it led a second opening into the femoral vein completing the short circuit from the arterial to the venous systems. The artery and vein were ligated and divided proximal and distal to the fistula with excision of the fistula. The color in the right foot was excellent following ligation. The wound was closed completely without drainage.

Several interesting observations were made after the operation. Immediately after ligating the artery the systolic blood pressure rose from 110 to 128 where it remained for about twenty-four hours when it subsided rapidly to the preoperative level. On discharge twelve days after operation the systolic pressure lay between 110 and 120 and the diastolic pressure ranged from 70 to 80 mm. of mercury; a decrease in pulse pressure of 10 to 20 points. There were no significant changes in pulse rate.

Following operation the blood picture showed some remarkable changes indicating a temporary concentration of the cellular elements. A red cell count of 4,850,000 per cubic centimeter before operation rose on the evening of operation to 5,200,000 and within twenty-four hours to 4,900,000. On discharge he had a red cell count of 4,700,000.

The child was discharged cured totally and was after admission walking without a limp. Within two weeks after operation the heart showed a definite diminution in size. The following measurements show: Right transverse diameter 3.1 cm., left transverse diameter 6.3 cm., biapical diameter 11 cm. (Fig. 52b). It is interesting that cardiac dilatation was demonstrable within two and one-half months after the production of the fistula.

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t ry m

Operat on—Und r local ancs the ia the bifurcation of the carotid wa expo ed nd the exte nal and internal carotid ar teri i olated The internal carotid measu ed 10 mm in di ameter the exte rnal carot d m a u ed only 6 mm Both vessel v r l ate l as l th conpany g t t e n l jug l r 11

Following these ligation the patient stated that the bruit was very much decreased but that it had not entirely disappeared. As this was what had been expected from our preoperative examinations nothing further was attempted and the wound was closed.

The operation was followed by a fairly severe headache which persisted for several days. There were no paraesthesias and no pareses or weakness on the side opposite the ligated carotid and no mental disturbances. The blood pressure rose immediately after the operation to 138 systolic 80 diastolic fourteen hours later to 140 systolic 90 diastolic and twenty-four hours later it was 140 systolic and 84 diastolic. Within thirty-six hours more it had again dropped to 128 systolic and 74 diastolic around which figure the pressure remained the next day.

Subjectively following the operation the noises in his head were reduced by about one half but a systolic bruit was still present. This was easily controlled by pressure on the left carotid indicating a connection between the artery and the aneurysm by way of the circle of Willis.

There then followed a period of convalescence during the next four months characterized by alternating periods of disappointment and satisfaction with the results of the operation due to the persistence of the systolic bruit, the frequent headaches and for a brief period double vision due to a palsy of the right external rectus. This latter difficulty gradually disappeared but altogether it ended until it could be heard only slightly in the stillness of the night and the headache practically disappeared. This was finally brought to a close when he had been free of about three-fourths of his trouble. Objectively at this time there could be only a faint systolic murmur over the site of the original thrill and bruit and the diminished palpable thrill that too would not appear.

One of the main points of interest in the management of the three vessels with ligation of the internal and external carotid arteries on one side without the aid of ligation of the vertebral distal branches. This result may perhaps be attributed to the multibranched nature of the jugular artery. When the ligation of both

carotid arteries is contemplated one should also ligate the accompanying jugular vein.

Discussion—Although not recognized until recent years there is no longer any doubt that in most instances the peripheral arteriovenous fistula must be eliminated if the patient is to avoid certain local and systemic effects which threaten not only his comfort but also his life. The local effects are dependent upon the arterial pressure in the venous system which manifests itself by large varicosities often complicated by ulcers. A fistula of the subclavian vessels has been accompanied by varicose ulcer of the hand and forearm. The main complaint of the patient may center about the varicosities particularly when they are on the lower extremities. In one instance the presence of a varicose ulcer prompted the house staff to undertake an operation for the removal of varicose veins the real lesion a large femoral arteriovenous fistula being undiscovered until the patient was under ether. Remarkable edema and swelling of an extremity have been observed totally incapacitating the individual.

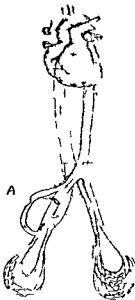
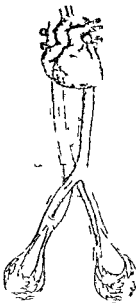
In addition to the local disturbance grave systemic effects may be produced by the cardiac dilatation which follows the large fistula of long duration. Reid has recorded several cases in which death followed cardiac decompensation due directly to a large peripheral fistula.

Granting that a fistula should be eliminated from the circulation our next problem is when and how this should be done. Reid has shown that some fistulæ tend to heal spontaneously and has advocated waiting six months following the accidental production of a fistula to determine whether or not the opening will close. Holman found however that only small fistulæ tended to heal spontaneously whereas large fistulæ did not. If there is early evidence that the heart is dilating that the thrill and bruit are increasing rather than diminishing in intensity and if variations in blood pressure and pulse on closing the fistula can be produced soon after the establishment of the fistula and these variations become more rather than less pronounced one may be certain that the opening will not close spontaneously.

and must be eliminated by operation to avoid further effects upon the circulatory system

In operation upon this lesion there are certain fundamental principles which must be observed. To neglect them is to invite disaster or failure to cure the lesion.

1. Ligation of the artery alone proximal to the fistula is absolutely contraindicated. The accompanying vein must al-



Fistula—Ligation of artery proximal to the fistula is absolutely contraindicated. The accompanying vein must also be

When confronted with a neurovascular fistula the collateral circulation (Fig. 576) will find it very difficult to find the collateral circulation to the heart but the heart fistula blocks the heart

When confronted with a neurovascular fistula the first of the

utmost importance that accurate studies be made to determine whether the lesion is a simple sacculated aneurysm or an arteriovenous fistula. If the latter lesion is overlooked and the usual treatment for simple aneurysm is applied, namely proximal ligation of the artery, there is grave danger of gangrene beyond the aneurysm. The distinctive features of a fistula as compared with a true aneurysm are (a) The *continuous* thrill and bruit intensified during systole. (b) The slowing of the pulse and rise in blood pressure on digital closure of the fistula. This sign is not always present in the early days following the establishment of the fistula and may be absent if the fistula is small. Occasionally it may be detected only by the electrocardiograph. (c) The high oxygen content of arterial blood withdrawn from the veins distal to a fistula as compared to venous blood obtained elsewhere. This additional distinguishing feature has been suggested by Pemberton⁷ of Rochester.

2 Ligation of the artery and vein proximal to the fistula only is also contraindicated. Even though gangrene may be avoided the fistula is not cured by this operation. Collateral arterial and venous channels open up to keep the lesion active in its capacity of transferring arterial blood into the venous system.

3 Ligation of the artery and restoration of the vein may lead to gangrene due to the great disproportion between a dilated tortuous venous system and the meager collateral arterial circulation. What little blood passes through the collateral bed finds its way promptly into the dilated venous bed without passing into the distal arterial bed.

It is generally agreed that the safest and most effective method of dealing with this lesion is quadruple ligation with excision of the fistula. One can then be certain that no collateral channels will open up to restore the local thrill and bruit nor will there be any grave danger of gangrene.

Matas has elaborated upon his principle of endoaneurysmorrhaphy by advocating restoration of the artery through an opening into the vein. This is occasionally feasible but in some fistulae of long duration there have been found calcareous de-

po its in the ti sue forming the rim of the fi tula and in the presence of such calcification thi procedure would be most inad visable The subsequent de elopment of a s mple aneurysm at the site of the degenerat d arterial wall has b n obs rved

Large fi tulæ f lo ng durat on are frequently accompanied by ev dences of beinning card ac failu e such as tachycardia and dyspnea on slightest exertion due to an excess e dil tation of the he t Closure f the fistula b d iastal comp ession o by ope ation may result in an even oreater dilatation of the heart as in Case I with c n equently an ev n gre ter thun in of an al ea ly ttenuated ca diac mu cle This additional dil tatio may be ju t suffic ent to change an nc p ent cardic decompen ation t an ctual one Thi st ge may be reco gnized b fo oper t n b v n ting what occu s when the lesi n is closed by d iastal comp ession If n te d of l owing of the pul and a rise in bl od p e sur the occu a ma k d tachycard and an unchanged l owe d blood pres ure t a good indication th t the hea t would be temporarily placed under a great st am t the mome t th fistula i clos d by op ration Cases e on rec rd in wh ch op at on h s b en de id d t b a e f thi v d nce Such de i n i denyin the p tient his onl hope of co ery On should r ther p ceel on the b i that th ca d c decompensat on pu ely a mechanical one due t th e e output mpo ed by the abn rmal opening a d that the elimin t n of thi op n ng by operat on fiers the o ly h pe for compl t el ef Barin in mind th xperimentally pro d fact th t th an in ea n blood olum n the p e nce of th fistula and th t t is this incr d lum of bl od wh ch is the immed te cau f the temp arily ex v dlatat o that occ s ft l min t n f the fistul the r tional pr c d r f the absen f x es el f bl od d e t th op e at on t lf) ould be to perfo m a ne t on and t move at lea t 500 cc and po bly 1000 of blood during the op er tio imm d t ly fter th fi tul h d b n elimin t d It se m h hly p ob bl that with s ch a p ut n the fistula with well adva c d ign f card a d l tat n could b op ted upon with ut d ge f d a b k d n ft th op at on

An additional precaution after an operation for the elimination of a large fistula accompanied by a marked dilatation of the heart is a prolonged convalescence with rest in bed. This is necessary to enable a myocardium long dilated and long accustomed to a low diastolic pressure to adjust itself to the altered conditions of a marked increase in diastolic pressure. Figure 527 gives an excellent illustration of the extent of the increase in diastolic pressure immediately following the operation in Case I. Such an increase might easily impose a considerable strain on the weakened musculature of a greatly dilated heart. Not sufficient attention has been paid to the possibility of a myocardial failure due to the burden of this increased diastolic pressure following the repair of the fistula. A premature return to normal or excessive activity must be avoided by imposing a period of enforced rest under careful supervision for weeks and perhaps for months after the operation. Thompson has recorded an instance in which a return to normal activity within several weeks after the operation resulted in all the signs of a cardiac decompensation. A prolonged rest entirely restored the patient to good health.

Summary—Careful investigations are necessary when confronted with an aneurysm to determine its exact nature, whether it is a simple sacculated aneurysm or whether there exists an opening between the artery and vein.

The characteristic features of the arteriovenous aneurysm are (1) a thrill and bruit continuous throughout the cardiac cycle but intensified during systole, (2) a transient increase in blood pressure and fall in pulse rate on closing the fistula by distal compression, (3) high content of oxygen in the venous blood obtained from the veins near the lesion as compared to the oxygen content of blood removed from a more remotely situated artery from the aneurysm.

If the lesion is an arteriovenous communication it is important never to ligate the artery alone proximal to the fistula as is so frequently done for the cure of a simple aneurysm. Such proximal ligation is contraindicated because of the danger of gangrene of the limb beyond the fistula.

Arteriovenous communications should be eliminated because of the development of cardiac dilatation. Quadruplication of artery and vein proximal and distal to the communication with excision of the fistula is the operation of choice.

The elimination of a fistula may precipitate a cardiac decompensation incident to overdilatation of an already dilated heart. To avoid this excessive dilatation venesection may be necessary in the course of the operation to withdraw the increased volume of blood which has accumulated in the circulatory system during the existence of the fistula.

A prolonged convalescence after operation is necessary to avoid the myocardial strain which might result from the increase in diastolic pressure accompanying the elimination of the fistula.

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CLINIC OF DR O F LAMSON

SWEDISH HOSPITAL SEATTLE WASHINGTON

CONGENITAL HYDRONEPHROSIS

The patient presented with a long history of back pain and frequent urination. She was born with a congenital abnormality of the kidneys. Her mother was healthy and had no history of similar problems. The patient was born at term and was healthy at birth.

At the age of five, she was diagnosed with congenital hydronephrosis. The condition was confirmed by X-ray and ultrasound. She was treated with antibiotics and painkillers. The condition improved but did not disappear.

At the age of ten, she was diagnosed with a urinary tract infection. The infection was treated with antibiotics. The condition improved but did not disappear. She was diagnosed with a urinary tract infection at the age of ten.

(a) The patient was diagnosed with a urinary tract infection at the age of ten. The infection was treated with antibiotics. The condition improved but did not disappear.

(b) The patient was diagnosed with a urinary tract infection at the age of ten. The infection was treated with antibiotics. The condition improved but did not disappear.

(c) The patient was diagnosed with a urinary tract infection at the age of ten. The infection was treated with antibiotics. The condition improved but did not disappear.

(d) The patient was diagnosed with a urinary tract infection at the age of ten. The infection was treated with antibiotics. The condition improved but did not disappear. She was diagnosed with a urinary tract infection at the age of ten.

At the age of fifteen, she was diagnosed with a urinary tract infection. The infection was treated with antibiotics. The condition improved but did not disappear. She was diagnosed with a urinary tract infection at the age of fifteen.

At the age of twenty, she was diagnosed with a urinary tract infection. The infection was treated with antibiotics. The condition improved but did not disappear. She was diagnosed with a urinary tract infection at the age of twenty.

I considered it unwise to subject her to extensive renal and cystoscopic examinations as she needs all her strength to un-

dergo this operation. We know that she is passing normal urine. The tumor is firmly fixed in its position and does not have the mobility that we would naturally expect in a benign tumor. We will make an ample right rectus incision extending from the costal margin to 2 inches below the umbilicus. We open the peritoneal cavity and examine the right kidney. This we find apparently normal except that it is slightly hypertrophied.

On the left side there is a tumor and we find it to lie entirely extraperitoneal. The spleen above the tumor is pushed inward. The tumor occupies the position of the kidney although it extends well above and below the kidney area. Fluctuation due to fluid can be noticed on palpation. I think we are justified in saying that we are dealing here with a hydronephrosis of the left kidney. It is quite evident that the kidney tissues have been completely destroyed in the development of this tumor. There is no line of cleavage to facilitate the dissection of the tumor as it is only adherent to the parietal peritoneum on the inner surface and to the lumbar muscles and fascia on the outer surface. Therefore it will be necessary to remove the tumor by sharp dissection. I would like to remove the tumor intact but it will not be possible on account of this. I am forced to drain the fluid before attempting to move it. At the descending colon just in front of it it is rather carefully dissected. There is considerable bleeding on the surface of the organ where it is dissected from the surrounding tissue.

We are now well down to the base. The retroperitoneal location and I can feel a dilated pelvis at the upper end of the ureter. We will proceed cautiously at this point in the mass of adhesion. It is rather difficult to locate the renal pelvis which must not be torn. It is surprising that I am unable to locate any large bleeding vessel in this area. I think now that the renal vessel should have been there. Only a moderate amount of oozing.

We have now successfully removed the tumor in normal sac from which the fluid has been evacuated. We then do an examination of the gross specimen. It is much dilated pelvis of the kidney with complete but intact the ureteropelvic

junction. The opening between the pelvis of the kidney and the large hydronephrotic sac is about 2 mm in diameter. We will send this to the laboratory for examination and proceed with the closure of the abdomen in the usual manner. On account of the enormous amount of raw surface present in the cavity we will place 2 small cigarette drains to take care of the secretions during the process of healing.

The pathologist confirms our diagnosis and reports that there is a complete obstruction at the ureteropelvic junction. The size of the gross specimen after being stuffed with cotton measures $25 \times 15 \times 10$ cm and the pelvis measures 8×3 cm; the cystic wall 2 mm thick. No renal artery is present. Apparently it received its blood supply from the stellate arteries of the kidney capsule. The fluid drained from the kidney sac is a thin watery fluid in which many cholesterol crystals are seen suspended. Section of the cyst wall shows but an occasional tubule and a few partially formed glomeruli.

Diagnosis—A cystic kidney due to imperfect blood supply and obstruction of the ureter (Fig. 527 p. 1440).

Discussion—It is quite evident that we have here one of the many congenital abnormalities of the kidney. An interesting factor is that there is no renal artery and vein in this kidney. Possibly there were renal vessels in fetal life but they must have been completely obliterated due to the obstruction of the ureter and the consequent formation of the hydronephrotic kidney of such enormous size as to cause pressure on the renal vessels or there may have been a congenital absence of the renal artery and the kidney received its blood supply from the stellate arteries of the kidney capsule. It is apparent that an imperfect blood supply plus the obstruction of the ureter contributed toward the development of the enormous hydronephrotic kidney we find in this case. This theory would be supported by the work done by Hinman and Morison in experimental hydronephrosis published in *Surgery, Gynecology and Obstetrics* of 1926. They show clearly the importance of the interference of the blood supply in the development of hydronephrosis. Their conclusions are based on a series of experiments on animals.

Hydronephrosis resulted in all cases in which the ureter and a branch of the renal artery were ligated

While it is quite impossible to state definitely that there was a congenital absence of the renal vessel it is quite evident however that the child must have been in fetal life a fairly normal kidney. Otherwise there would not have been sufficient secretion for the development of the enormous tumor felt at birth and we would find now an atrophied non-functioning kidney which would never have been observed by the mother and the attending physician.

I feel that therapeutically we can feel reasonably assured that this girl will recover from this operation and probably will have no further trouble as the result of this abnormality. The other kidney is functioning well and capable of doing the work of both kidneys.

HYDRONEPHROSIS DUE TO AN ANOMALOUS RENAL BLOOD VESSEL

W h b f y g ma t ty th y f g Wh I
 sa h m f th fi t t m y g h c mpl g f s p
 th g f th ght l ypo ch d m t d g d w d t th l
 q d t Th gh h ha h l t m tt t tt k f m l p t t
 al f t th m th pe d f fi yea h tt b t d th
 l t tt k t th t h k p th m t h h h h d t k
 j t bef th set f th tt k
 D g th mun t f d lght h t m t b t
 100 6 F th rw h g l d t w goo l H w h th
 fi ld d p n d d to th ght k d y D O A N l b
 r d th t th k d y mpl h g ly tw th d f ts mal
 f t d th py l t g m t d th d g f d d g
 f b t t t th ry d g
 Neph l th w l d d b f th l t f th tt k
 f p th b f bl d th d h t t t h d w
 th y p t F th d g th y tl f th p t t t w
 d d d th t th e l b tru t w d to a t m m l t th
 u t pl j t m ly t so y bl d l t t g th
 app t A g th ly m th d f l f h d t
 pe t d d

Our fir t step shall be an oblique incision parallel with the quadratus lumborum muscle extending high up into the costo vertebral an le a oiding the ilio inguinal and the ilio hypo gastric nerves We have ecured a g od e po ure of the field As I am opening the false cap sule of the kidney I find consider able adhe ions between the capsule and th kidney undoubtedly due to the many pre ous attacks he l as had

The kidney i now well exposed and our diagnosis is verif ed We can plainly see the uspected anomalous blood vessel ros m the urte opelvic juncture It is a renal artery coming from the abdominal aorta and enterin the kidney at the lower pole anterior to the ureter (Fig 528) At th s point the urete is bent on itself thus forming a kink The e i o doubt that the etiologic relationship of thi blood vessel i the only vis ble cause of the renopelvic di tention v e find he e



Fig 1—Lateral view of the pharyngeal teeth of the fossil fish, showing the arrangement of the teeth on the pharyngeal bone.

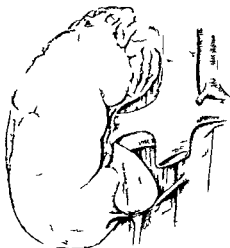


Fig 2—Right lateral view of the pharyngeal teeth of the fossil fish, showing the arrangement of the teeth on the pharyngeal bone.

The kidney is slightly enlarged and the pelvis of the kidney dilated somewhat hanging over the accessory vessel as if this were a suspension bridge. However considering the fact that this kidney is still capable of performing two thirds of its normal function we will not disturb it but will confine our operation to the severing of the anomalous vessel. It is my opinion that in due time this kidney will regain its normal functional capacity as there is no indication of extensive degeneration of renal tissues.

Through ligation and section of the vessel we have removed the main cause of renal obstruction and by loosening up the adhesions we may well hope to restore the normal anatomic condition in this area. In order to slightly elevate the kidney and thus reduce the pressure on the ureteropelvic portion before closing the field of the operation I will take a tuck in the false capsule of the kidney at the lower pole.

Discussion—Irregularities of the renal blood supply have been observed for some time. Quain states that 25 per cent of dissected bodies show an anatomic variation. Branches of the renal artery or an accessory artery instead of entering at the hilum sometime reach and penetrate the kidney near the upper or the lower end or on its anterior surface. Sometimes it is difficult to determine whether the anomalous vessel is from the aorta itself or from the renal branch. Generally such vessels as we see today run anteriorly to the ureter and enter the lower pole.

Merkel reports a few cases in which the vessel were found posterior to the ureter. Unless such variations are so situated that they cause obstruction to the pelvis or the ureter they naturally do not attract our attention and are only discovered during exploratory operations or at autopsies. All surgeons do not believe that a vessel ventrally placed in relation to the ureter may cause hydronephrosis but all agree that when dorsally situated may cause such a condition.

We cannot ignore or overlook the fact that mild grades of intermittent hydronephrosis are often found due to a definite kink in the ureter caused by an anomalous blood vessel that

extend from the renal vessel or aorta to the lower pole of the kidney. Generally after ligation and section of the offending vessel the patients make satisfactory recovery and show no tendency for recurrence of the condition.

There are some who do not believe that the excision of the vessel will assure satisfactory results and that a subsequent removal of the kidney will be found necessary. Undoubtedly the prognosis will depend largely on the amount of destruction of the renal tissue. It is my rule to give the kidney a chance to assume its normal function if its functional capacity is not lower than half. Otherwise it may be advisable to remove the affected kidney at the primary operation.

CLINIC OF DR CHARLES D LOCKWOOD

PASADENA HOSPITAL PASADENA CALIFORNIA

ABSCESS OF THE LUNG

IMPROVED methods of diagnosis safer methods of anesthesia and new developments in technic have contributed much to the treatment of pulmonary suppuration. The subject is of increasing importance because of the large number of operations being performed upon the throat and nasal sinuses. Recent studies by Whittemore¹ and others have shown that 50 per cent of lung abscesses follow such operations. Many of these lung infections fall into the hands of medical men or surgeons weeks or months after their infection, often neither the patient nor the doctor connect the infection with the operation but assign it to a cold, influenza or other more recent cause. It is not uncommon for the specialist who performed the operation to be ignorant of the subsequent lung infection and to be skeptical of the etiologic relationship between it and the nose and throat operation. Two such cases have come under my observation in the past year and are here reported.

Operations upon the nose and throat have been considered too lightly in the past and have been undertaken without sufficient preliminary examination and preoperative care. It is still the common practice among nose and throat specialists to operate upon their cases with only a perfunctory preliminary examination and usually with no preoperative preparation. Such patients rarely remain in the hospital more than a day or two and in many instances are not seen by the specialist after leaving the hospital or at most once or twice at his office. In the large majority of cases the results have been satisfactory but the increasing number of late infections coming into the

hand of the surgeon strongly suggest greater care not alone at the time of operation but also in the preliminary examination and in the postoperative care. This is the most important preventive measure in lung infection. Patients should be observed for four weeks.

Diagnosis: (a) History of the case: special attention should be paid to the diseases of childhood, recent attacks of influenza, operations, and aspiration of foreign bodies. (b) Physical examination. The usual method of physical examination should be employed, but they are very often misleading. Auscultation and percussion will many times yield no physical signs. At other time when the abscess cavity is filled they will reveal the signs common to this lesion. A x-ray film taken stereoscopically in the anteroposterior position and in the lateral position will often show increased densities and changing fluid level pathognomonic of lung abscess (see Figs 529 and 530). The greatest contribution to diagnosis is of lung abscess; the injection of lipiodol x-ray taken after this procedure will definitely outline the suspected abscess (see Fig. 533 and 534).

REPORT OF CASES

C. I—J. G. ma. bo. t. t. ty. yea. f. g. M. ca. c. m. t.
th. Ol. V. S. m. th. d. gn. f. p. lm. ry. t. b. l. H.
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101. F. H. g. ral. d. t. good.
E. t. P. gn. f. b. ce. h. l. w. l. b. f. th. l. ft. l. g.
t. be. t. b. ll. ld. b. f. d. Ray. xam. t. h. d. w. ll. d. fin. d.
bscess. th. h. f. g. fl. d. l. l. (Figs 529, 530).
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f. m. d. ll. g. ff. th. bsc. ed. Th. b. ss. a. p. d. by. l.
ca. t. ry. d. pl. d. th. th. fi. g. l. f. d. h. b. ss.
bo. th. th. mm. cat. g. h. gh. pe. ung. l. m. d. m.
Th. d. un. g. t. be. od. d. th. gh. th. l. b. ss. t. th. m. ll.
ppe. P. t. mad. ll. t. l. d. d. sch. g. d.
ppa. en. l. d. b. th. b. ss. gr. d. ll. y. fill. d. d. h. m. d.
t. th. Sa. m. T. mpl. th. f. h. c. se. trap. l. t. h.
pl. ty. ll. b. essary. t. ll. p. th. g. d. ll. c.



Fig 529—Up ght po t mp so w th F 530 d m t t h ft g
fl d l l



Fig 530—R l t p l mp so w th Fig 529 d m t t

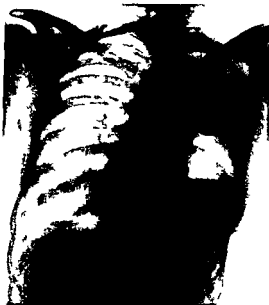


Fig 31 — Ra film 1 weeks po pte h ing ppe l oe
sol da ed h hyd p m h rax.



C s II—M M M A f l g d t t Th p t t
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 h l ft h t Wh by D J S H l be l t h w
 t m ly ry d ry ll
 Exam t l l p l j t t t l th l ft d
 cult t m t al l ft pp l l d m l l l th d

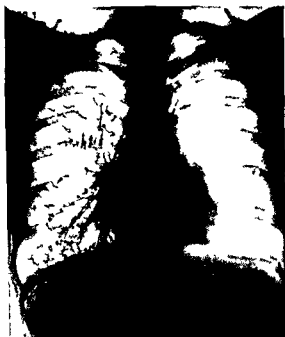


Fig 533 — R film f l p d l B h t m l t p l l l

th t l h l f f th l f h t Lp pe th fl t
 h f h d j b l w h sc p l d g f
 d t h llary l R y fil f th h t h ed th fl d l w d
 th pl l y d l d t f th ppe l b
 Ra l g os P m bsc fl f ppe l be h p mo-
 th d l d h
 T tm Th h f t p ted l l ghtly t b l fl d w th
 d h h t l l t P t t d t h g h f v
 j j Th f h g h t be d t l g b-c b t

fi ll i ed l i) x l r t l l p f ll g t
 ll et my Th p fi lly l f t th rco m d
 d g f ec d y bsc se b th h l mb fasc T blood
 tra f ec ssary t m h sep d p f d
 (Fg 531 3)

C III—M F L g th t ex Th p t t d
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 t l l g l esth O k ft h perat h began
 co gh g l tly t mperat m t l 103 F h h ll ea d
 ymp m fl g fect H i h D Ch l R C l fSe tt)



F 534— l fl f l f l l f ll h ws
 ll ll h (l)

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 19 7 h cam d m bse ll h g pe f k f h gh
 f d gl h pec ri f l f l l P y
 flm f th h k h l f l f l l h d l
 t pl ll bces h l l be d h f l l g fl

lob f t P tural d g t ed d th l p d l ject
g Th ly l g l t mp m t at f t d ft th
f pect t t t t lt pl th pl t w d d f t t
t d th hosp t l f th p pose J ry 1928 b t m h l h d
d f ped fl za affect g h l ft l g Th d d
ft ltat th t pe t w po tp d P t ral j g th
t n bed t ed f th m th l g h p t t dd ly
mad t f th bett p t m d m hed co gh d d l m l
ppa t mpl t eco ry H mp m t l th k h ld be sc bed
t the mpl y m t fl p d l po t l d g d ut mm zat by
h d tt k f fl (F g 533 534)

CLINIC OF DRS J TATE MASON AND HENRY C TURNER

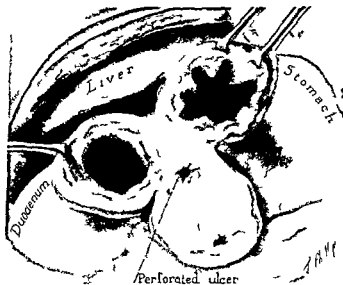
VIRGINIA MASON HOSPITAL SEATTLE WASHINGTON

RUPTURED DUODENAL ULCER TREATED BY JUDD PYLOROPLASTY

T S N 27089 h t m d f f t y t y d m t t d
t th V g i M H p t l w t h t h m p l t f s e b d m l m p
f h d r a t
H f m l y d m t l h t g t
H h d l y b t l y w l l d t g p t t h t f d
d l l m p t m S h y m p t m c o t g f p g t p
t t t h h f t m l (l e d b y f o o d l k l) h d t h b g
g y p t t h t f t h p t k D g t h s e
y h r g d t w p e ! p y f b o t t m t h h
d g h h t m h w l d h t m h p m T h S p p y d t d
t t m t t h l k a l g t J f f m a l l m p t m l o c c a
H h d b t b l d w t h s e m t g h m a t m
m l A l l t h y t m l y g t t h p
T h p a t t p t t b l t a t d t d p t h d m
t t h h p t l w t h m l l g t p f l l w g m l H w b l t
g t l m t m p l t l f f t h p b t h f l k l d
t e d g u l l t h h k
O t h m g f A p l 19 8 w h l t k t h p t t w d d l
k w t h c r u t g p p e b d m l p T h p s o b m
g l d t h g h t t h b d m d w l m t b e a b l H f l t
t d b t d d m t A f f g g e a t l y f b t h h
b g h t t t h h o s p t l f l f
O m t h p t t a f d b e t m l y l l d l p e d
m a g h g p p m a t l y 170 p o d f f g t d t H
t m p w 100 8 F H p l w 88 d h b l d p 130
y t l d 78 d t l H f c e p l d h p e p g h p
f s e l y H b d m m l d d p t d b o l l k g d
t y t h g h A l l t l p h l f i d g t l y k t T h
l y m l
T h d k f p d p e p t l m a d l g y
l p a d d
T h b l m p e d h h l f h f t t h p t
d m d h h s i l h p a b e g l l t d t h t m

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 th sam d h g pp mat ly th sam m t f d t bo t
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F 53 —T lee h se ed port f t d od l ll

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 case c ld t ot ha b n mo e c na k bl Th pat t v
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 pital v th ery little n n c

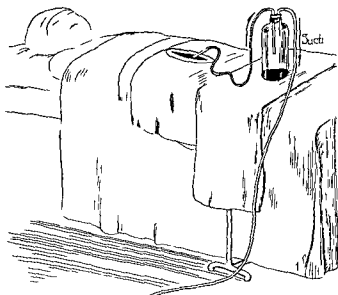
CESAREAN SECTION ON DWARF AGED FORTY YEARS

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pe t mal d h p l 98 p m t All xam t
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t l blood p ess d pped t 40 Th p rat ecesa ly pos
pe d t l th d t f h p t t

D g th ght f Ap 15th lab pa st rt l d l in h m m
g f Ap 16th th m mb pt ed A th t m h t



F g 36—Sh m h d of sa g h blood h h scaped t th
pe eal ca d h h l g th pa
jcc

mf rt bl b h d good dm ss S
mm diat l sched l d Th bd m pc d h gh h gh m dl
un th ru p ed h gh h p l d
rma l bl h ld gh g 7 po d d l d l ed
Blood l t t h pc l e h h pe d
ll cted by ppa l g sod m
sol t (F g 536) Th l t nl d l g h pa
l Th ed f f pp ma l 0 l
blood

Th t ru d bd l sed th l y l th t t
l ft th t bl f d t Sh lled f th hock f tl t



Fig 537—M th b by d t d y f ll w g sa t

ry j kly d h po t p t l w f l Sh
lk d t f th h p t l h t th p t pe t d y Th b b
gh 17 po d 10 (Fig 53)

set ill the sa h h t t th l H th
h m gl b h d d pped 45 d h blood pre l 80 d
d t l 20

O April 4 198 cesa e. set a sched led b t pla g th
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po d t f th d f h pa

D g th ght f Ap l th labo pa rted and ea l in h m m
g f Ap l 6th th m ml pt d A h t m h ost

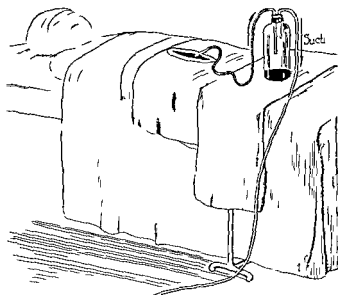


Fig 36—1 m hod f sa g h blood h h scaped h
pe eal ca t d h ch a l gi t h pa tri en
ject

comf tabl b t h co d good d & Sec
m ediat l sched l f Th bd se t h h h h dl
c h ru a pe ed h gh h ru pe l f
rm l tabl h ld gl g po d d l e d l ed
Blood los h pe l l h ru pe ed a
collected by tuo ppa l j e sod m ra
sol (Fig 36) Th l h l l gi h pa
l Th co ed f l pl m l 0 f
blood

CLINIC OF DR A ALDRIDGE MATTHEWS

ST LUKE HOSPITAL SPOKANE WASHINGTON

PERFORATED UTERUS WITH STRANGULATED HERNIA

B P g th ty f y m ltp
 Ab ttheeh p t th tm f gth pat t tt mpt d
 t tw mad Sh w b t g t tw d h lf m th F
 d l t th dt h flr th mea d th ght h h d fl
 Th t dy h ta t dt fl w w th t d fi t ca h h h
 t d d be q t f f tl p t tw dy Tw v g g h d
 hll d t mp t Y t dy th t mp t t t 102½ F Tt
 tt d g phy th ght t b t t mpty th t ru d tw th t
 esth t th rv f ly w ll p Th tw p d
 d h b ght t p ft cam l g w th t h h th ght
 t b pla t Wt p ll g t t ltti f th th doct g d
 tt b b l d mm d t l d d mbl t t p th h
 V g l m t l d l p f b w l wh h q t d t d d
 d p p pl l fill g th g A mm d t l p t my w p
 f md Th t w t fl d w ll t t d d th b w l t ghtl
 dg d th pe g th t ru wh h w l cat d th p t
 f th l w d w n j t b th fl I p d th t f m th
 pei t t th f d b t f d t t t th mak g t
 mp ss bl t d th b w l by dg t l d l t f th f m w th
 th bl t d th b g b t f t f g t u th t g l t d
 loop At th t m of d g th w som q t my m d w th
 th b l ld rv t tw pp d w m w t bd n lp k d
 p d d t t th t wh h w w mpty U p t g
 b l g f d tw g g t l d d t f t pl
 Pl d se l w kd w ll rubb t b th ld d p t
 pt tt b d F w l po t g 1500 f m l lt l t d
 h b t L g h t w t p p l cat f b l t w ppl d t th
 td m l w d d th d g h g d ev rv f h t d
 d g l h t t l l l d h w g d
 Pt th d t my t m t lly iak g mpl ry
 T d y fl g F b ry 11th p t t d l p d t g
 gh h d g d t t f th ld m h h ft d t
 pecially t T k 1800 f fl d b m th ry tp t b g
 350 f th h t tw ty f h fl w g th p t Fl ry
 12th t mp t t t 100 6 F p l e g g d 10 V m t d
 50 f d k g fl d t h m h d t d d th g A R hf
 v 8-9 457

days. Clear liquids were given every three hours and plenty of water most of which was siphoned back. It is important to see that the tube is not clogged and continues to siphon. It is satisfactory to the patient to be able to drink even though a lot returns by the tube. It is a simple matter to determine when the patient will tolerate liquid and that is by clamping the tube from time to time. I have utilized this method for the past two or three years almost to the exclusion of the ordinary stomach tube and washing postoperative. It is important to see that it is properly placed and retained as well as to see that it does not become clogged by mucus etc. A description of this procedure was given by me in SURGICAL CLINICS OF NORTH AMERICA October 1924.

t b w pl ed th t m h wh h a kept f mb fd
 P t t g fl d th g t port f wh h ld ph ba k. Fve
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 T d ect t f f blood 400 d 3 5 g th
 ghth d y t f th j u d d bleed g ll b ung h lpl l
 cc t f th f th sec d t f f w d ys lat

The patient left the hospital on the thirtieth day to save expense as conditions were such that she could get good care and nursing at her mother's. Temperature still going up about one degree in the afternoon. Wound healthy and granulating. Jaundice about gone.

It took another month for the patient to be up and about comfortably.

There are several points that might be emphasized in this case.

It was unwise to attempt to pass an instrument into the antile ductum without drawing it down so that the canal could be somewhat tightened.

The doctor is to be commended for when he found that he had perforated the uterus and a piece of gut had been brought down to the surface, he cared for as quickly as possible.

The after-treatment in this case was most important. There was much detail in the report which could not be gone into but some of the more important things were. Relaxation of the strangled gut free drainage. Fowler's position to keep the intestines in the lower abdomen supported to prevent keeping the patient all watered by saline solution and glucose and very important especially with her to keep down her stomach distention. This was done by a diet on Rhus tul. This was extremely important.

days Clear liquid were given every three hours and plenty of water most of which was siphoned back. It is important to see that the tube is not clogged and continues to siphon. It is satisfying to the patient to be able to drink even though a lot returns by the tube it is a simple matter to determine when the patient will tolerate liquids and that is by clamping the tube from time to time. I have utilized this method for the past two or three years almost to the exclusion of the ordinary stomach tube and washing postoperative. It is important to see that it is properly placed and retained as well as to see that it does not become clogged by mucus etc. A description of this procedure was given by me in SURGICAL CLINICS OF NORTH AMERICA October 1921.

IMPACTED STONE IN URETER

C I—E W H l oc p t rpe t f l d p t
 h t ry f oi seq At tf tee th g h d pa
 h l ft k d ex C g l ll g th sam ea
 dat f pa Th l ted f se l h d d l l dappea d
 d h f lt p fectly ll H t d ch g h H h d f
 ml tt k d f h ld t ll tl h g th
 locat f th pa Th l t tt k th l g P l t d bo t
 th ee h S dd f se l f f lt w ll f
 Phy cal t g t Th 4 t 6 l ll p
 fld th se g t Th y ll pl t ry (F g



Fig 538—Fl t film l th () cath th beg g f t (b)
 h d f t j t be d cath

538 539) Th p t t ma d tl h p t l t t d y Th
 l k g f f mbe f d y h mtt t d b h
 ghtee th d y th d h l d
 H h b b k t ca t h th l cath t p d
 h t m bo t th d y p rt Th pp ly t t
 t ghten g f th t cath p d j d ly d k d y f
 t g m ll

C H—E L f m l g f rty th yea F mly d path
 f sc y Ab t t y g h d q t l t f d sc m f r m l h
 kud ea d sa ph s h t l d h h h d ton an th t kidney
 b t xam t mad Th d m f r t h ecall t
 t t t b t se d t lly pa sed ay
 F th pa t th ee yea h d t k f d sc m f r t h l f t k d ey
 ea Th l sc m r t th se t t m l t g f f w h rs



Fig 539—Sam F g 539 f th j f 2 pe t sod m
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th h ld pa q l f d b l d Th h b h p-
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 d la g mbe f p c ll C sc p xam l h d
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 meatu
 Ra port Th l g u l f se h t l l f pel

t t th t l e th t I ject l t t l wtl th t
d h d bl d l t f th t l t (Fig 540 541)
P t t m ed tl h p t l th ty f l y Th so f h
b g sol g n cc t f f f th p m whch d
th th t th d y l s ral block tl f ll g th f m
p rat Th d g f f m tl d p t d f fift d
f ll g m l f to th l t f w d y b g ry l t t d t m t t t
W d a th ghly heal d by th t ty f t d y

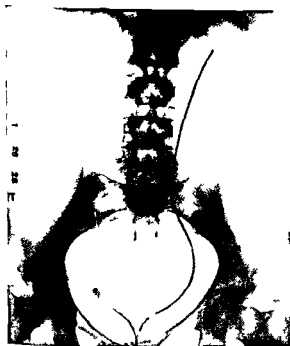


Fig 540—Sh g cath t p g w ll p ght t L ft t
b t t d by d th t ta

Comment—Both of the e cases were operated upon through a i inci ion starting 1 inch in from the anterior supe ior spine of the ileum and extending down to the pubis being about 1 inch internal to Poupart's ligament. The muscles were eparated down to the peritoneum which wa by blunt d sect on reflected toward the midli e locating the u eter v h re t cro e the iliac vessel

the ureter. These longitudinal wound will heal without suturing but I have never resorted to this method. Penrose drain was placed in the wound about 1 inch from the ureter in each case. It has never been my good fortune in these cases to have one not leak some urine for a while.

These cases should be dilated occasionally to be certain a stricture does not develop more as a result of the incarcerated stone than the healed incision. It is well to make the incision in the ureter above the stone and not directly over it when it has been encysted for some time thereby the possibility of stricture being lessened.

Various non surgical methods have been devised for the removal of stones in the lower ureter and it is estimated that 75 per cent can be removed or induced to pass. It is further estimated that 70 per cent of stones which require surgical intervention are located in the lower third of the ureter.

TUBERCULOUS PERITONITIS

C B ag t ty y f mal t d t w f l t b D
 C w f Ch y m th b g good health f th l g b t l
 f health a y g ma h d t b l d ha h l mbe f p l
 ry h m h ge Th we t t wh d d f t be l H
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 phy lly bo th g
 Abo t fi eek g l th pep d pp t te d t d h lo
 bd m f ll r th m l H d p l d t be t p t d
 t t mes Th f l gr d lly eased t l th wh l bd m w
 d t d d D t t k h h d y t mpe t
 Phy f m t g t e pt f bd m l d t t h h
 symm t Th w h ft g d l ss espec lly t l l th
 fl k A cu wa ld be l t d
 Op t E pl t ry l p t my w d l g yg
 th 4125 c f t w l d fl l w m d All th p t l
 f ed w th t b les Th ppe d a m d w th d fi
 culty t bo d d n nd ry dh t t th j g t
 W f f l f beak g t th b l t f th th k g d
 f b lty f th g t ll Th f ll p t b d d t m to b y m
 l ed th th t f th sc L mph gla d t l d B ll
 l sed tho t d g P t nt mad g d ry lea g th b p t l
 th t th d y
 Upo t g h p tal h h d mal t mp t f k y t t
 7475 Th t mp t f ll w g th p at mal m h f th
 t m b t occa lly th ft w ld g p t deg
 4 ft b g h m f bo t th d y h h d f t t ft t m
 p t f f d y th h gh t b g 102 F th b m g m l
 d ma g so

Comment—Tuberculous peritonitis may occur at any age but is more common in early adult life

The focus of infection may be near o remote—intestine appendix fallopian tubes lymph nodes lung or bone If the infected focus could be removed such as the appendix fallopian tubes cecum or mesenteric nodes thereby preventing infection of the peritoneum it would make the possibility of cure much more favorable

We may have the exudative fibrous and ulcerated forms and it is possible for all three to exist in the same patient at the

same time the exudative being the most favorable and the kind the patient reported had. It is difficult and almost impossible to demonstrate the tubercle bacillus in the fluid.

Ascites in young persons unsociated with heart or kidney disease or edema elsewhere in the body usually means tuberculosis of the peritoneum. If the patient is in the cancer zone it may be difficult to differentiate between malignancy and tuberculosis.

There are a number of theories as to what happens and is responsible for the great benefit many of these cases receive from a laparotomy. There is no question in my mind if the focus of primary infection is removed this would be a long step in the right direction for permanent cure.

In young women it is a rule to do an appendectomy and not remove the tubes unless they seem definitely the focus of infection but if the ascites re-form repeat the operation and remove the offending focus—tubes or what not—at this time if possible. Drainage in the case should always be avoided for the fear of a troublesome protracted fistula. The after care and the time it takes is just as important as in any other form of tuberculosis. I cannot tell where

The theory some time ago was that by opening the abdomen and letting the abdominal improved beneficial but there is some question how much benefit is derived from this. Relieving the ascites and removing the focus of infection with supportive treatment is conducive to cure. And what possibly does happen is that the exudate is converted to the dry dense form which is a more favorable stage for spontaneous healing.

RAYNAUD S DISEASE

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 O yea l t A g t 1926 p t t h l th t p f h d f i g
 th l ft h d th k n t b g b k Soo th f i g b cam bl k
 end d b g t p L d k l t th w d t d t



Fig 54 —Sh gh d ll h l l t p t l b g ph h g
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seq tly

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l gh g beg th m h pa At th sam t m th bg toe th lf
foot becam fected f ll ing gr g l It lso l ghed and
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th base Th d F bru ry 15 1928 S th t t m th
d h ve co t ed t l gh d d th co d rabl pain asso-



Fig 543—Feet f sam pat t h Fig 54 W d f gr t toe
l ft foo d base f h d toe f ght foot h l d

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f m y local ppl ca la g m f R g sol t t m lly
d f m l rt al ympathect my both th gh H th sym
pathec mes d d gi l f f bo t ix d y d th v d seemed t
h som d f heal g Fgu 54 543 h l poo ph e ph
h f ly ll th d f h d d f h t m
A p ese th Alp lgh be g ed d l h lgh m
p m P t t ll d ea m

Comment—Peria terial s mp thect m t in th r
mo l of th out coat fa tery O t 2 inche f the a
tery should be tripped in o d r to l m nat th n rv plexus
enci cln the art ry whi h i in th l t t th s inte rupting
it connection with the ne f m m nd periph ral pl vuse

A definite diagno bef e operat n mo t impo t t in
th e case as only a m ll pe cntag are cu lo mp cl b

this procedure. I appreciate the fact that some neurologists do not recommend periarterial sympathectomy for Raynaud's disease but many do.

I am indebted to Dr. George Rice and Dr. John Bird for their help in diagnosing this case as the differentiated between Raynaud's disease, syringomyelia and Morvan's disease. The absence of sensory dissociation (loss of pain and temperature sense with preservation of tactile sense) rule out syringomyelia. The preservation of all forms of sensation excludes Morvan's disease while the symmetric distribution, the color change and trophic symptoms all point to Raynaud's disease.

It is very important that the circulation of the extremity be thoroughly investigated before the operation is performed.

The most favorable cases for periarterial sympathectomy are the form of Raynaud's disease with predominance of the vasoconstrictor expressed by local syncope. In these cases it is claimed we get great improvement and sometimes cure according to Rene Lenche.

When the attacks of syncope are absent or quite mild when the disease is characterized by a local asphyxia coming on in attacks the operation is no longer certain of success. Before its performance the necessary test must be applied with the warm bath, the cold bath and careful oscillometry. If the cold bath causes the onset of painful spasms periarterial sympathectomy will probably prove efficient and should be performed. If the cold bath relieves and the warm bath on the contrary gives rise to pain periarterial sympathectomy should not be done and amputation should be given preference.

CLINIC OF DR. WAYLAND A. MORRISON

ST. VINCENT'S HOSPITAL LOS ANGELES, CALIFORNIA

A CASE OF DOUBLE INTUSSUSCEPTION FROM TUMOR OF THE TERMINAL ILEUM

We first saw this young lady in December 1925 when she was referred for painful periods and severe attacks of pain in the right lower quadrant. At that time she was studied carefully and a few days later a strangulated ovarian cyst and chronic appendix were removed. She had an uneventful recovery and was greatly improved until her present attack.

She came under our observation for the second time two days ago. Her present illness dates back two weeks when she began to have cramp-like pains in the lower abdomen. The pain came on in attacks and usually were relieved by lying down and applying heat. The attacks had no relation to meals, menses, or urination. An enema, however, occasionally would relieve her. More often it increased her discomfort. She was able to work until three days ago when the pain became very severe and seemed to settle in the right lower quadrant. She was nauseated but did not vomit. At this time she noticed a mass in her right side. The mass was tender and quite hard. At times it seemed to become softer and the patient thinks it has changed position. She had a similar attack a few weeks ago which lasted only a few hours.

Physical examination made at this time discloses a well-developed and nourished young woman of thirty-four. Her pulse is 90, respiration 20, temperature 99° F. The skin is moist. There is an anxious look on the face. The head and neck are normal. There are no palpable glands. The chest has no abnormal dulness. Breath sounds are normal throughout. There

are normal. The heart is normal in size and position. No murmurs are heard. The abdomen is slightly distended and there is moderate muscle spasm. In the right lower quadrant is a mass irregular in shape apparently in the region of the cecum. Peristalsis is active. Pressure over the mass causes return of the cramp-like pain. There is no shifting dullness. The extremities are normal. All reflexes present and equal. Urine examination

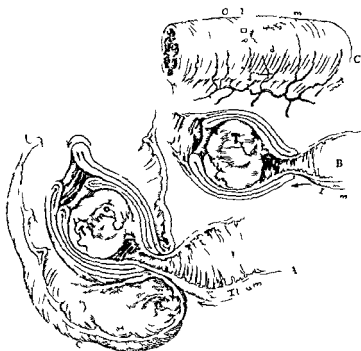


Fig 544

negative except for a trace of active. The blood count shows red blood cells 4,770,000, hemoglobin 80 per cent, white blood cells 6837, lymphocytes 30 per cent, polymorphonuclears 68 per cent. The Warrmann negative.

A barium enema was given and the film disclosed a finger-like projection at the large bowel through the ilocecal valve.

A diagnosis of intussusception was made from the findings and an immediate laparotomy advised.

A right rectus muscle splitting incision is made in the lower abdomen. The peritoneum is opened. The cecum is found to be greatly enlarged. On palpation a large mass can be felt within its wall. Apparently the small bowel is intussuscepted into the cecum through the ileocecal valve (Fig. 544 A).

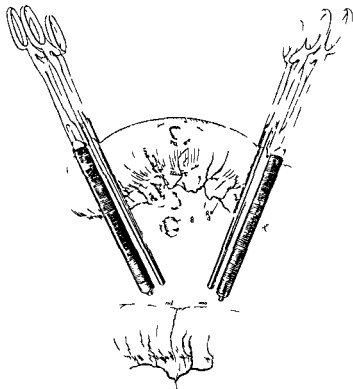


Fig. 545

By making pressure from above the mass and traction on the small bowel about 6 inches of the bowel is drawn through the opening. At this point a second mass is felt obstructing the opening. This finally is pushed through the ileocecal valve with some difficulty. Examination discloses a second intussusception.

are normal. The heart is normal in size and position. No murmurs are heard. The abdomen is slightly distended and there is moderate muscle pain. In the right lower quadrant is a mass irregular in shape apparently in the region of the cecum. Peristalsis is active. Pressure over the mass causes return of the cramp-like pain. There is no shifting dullness. The extremities are normal with all reflexes present and equal. Urine examination

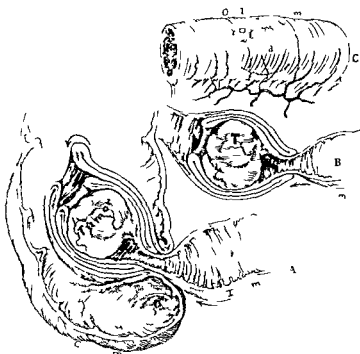


Fig 544

tion is negative except for a trace of protein. The blood count shows red blood cells 4,70,000; hemoglobin 80 per cent; white blood cells 6830; lymphocytes 30 per cent; polymorphonuclears 68 per cent. The Wassermann is negative.

A barium enema was given and the flattened closed a finger-like projection into the large bowel through the loculated

Examination of the tumor mass shows it to be extremely cellular and very vascular with a fine connective tissue reticulum. The tumor is composed of large atypical lymphocytic cells round or oval in form with oval nuclei and granular chromatin. Many of the nuclei are hyperchromatic, a great many are undergoing mitosis. Many of the mitotic figures are quite irregular.



Fig. 547—R. g. g. m. h. w. g. b. m. m. th. ca. Sh. d. w.
f. th. t. sc. p. l. m. li. m. y. b. tl. m. d. sc. d. g.
l. Th. h. d. h. k. d. by. t. g. h. p. t. t. d. th. fl. o.
p. h. g. th. p. t. t. l.

There is no evidence of an orderly arrangement of the cells. The tumor is a rapidly growing sarcoma, probably a large-celled lymphosarcoma arising from the lymphoid tissue of the bowel. Diagnosis: lymphosarcoma of the intestine.

Tumors of this type are highly malignant and death usually follows in a few weeks or months. The process may be delayed by therapy, but it is apt to reappear in some

tion surrounding a hard tumor mass (Fig. 544 B). This is easily reduced and shows a depression in the small bowel under which is felt a mass the size of a walnut (Fig. 544 C). Several small glands are felt in the mesentery. Clamps are



Fig. 46.—Tum. mass. pp. port.

applied with aoid mass. The mesentery and gland are removed at the mesentery. A little last mass is easily accomplished. The wall is closed in the usual manner without drainage.

CLINIC OF DRs JOHN B AND WILLIAM B
McNIPHINIA

ST JOSEPH'S HOSPITAL TACOMA WASHINGTON

PARALYSES OF THE RECURRENT LARYNGEAL NERVE

As the next case comes up the corridor the labored and obstructed breathing of the patient almost make the diagnosis of bilateral abductor paralysis. This case will burn into one memory beyond a chance of ever forgetting. It will cause one to always use every care in protecting the recurrent laryngeal nerve at the same time bearing in mind that factors other than surgical may be responsible for the condition.

As you will see the patient wears a tracheotomy tube though for the past twenty four hours the tube and opening has been blocked. The thyroid gland has been well removed. The luckless surgeon has done his work conscientiously but through some slip—one of those rebukes we all get to remind us that we are not infallible—the recurrent laryngeal nerves have been left functionless and her vocal cord is closed like the doors of a vault.

The surgeon in the face of such a disaster searches his soul for the cause not that the real surgeon wishes to shield himself behind the recorded ill successes of others or meanly throw the blame on Providence. He charges himself with its fault though ever excusable. No human defense or legal makeshift can soften the relentless judgment of the jury that sits within his own mind.

Loss of voice with obstructed breathing may be due to a number of factors and conditions. Sometime it is the result of arrangement of tissue in the early development of the thyroglossal duct the product of the median pouch sometimes anatomic and lastly what especially interests us surgical trauma

other part of the body. We may expect a recurrence in a few months. In order to give the patient every possible chance x-ray therapy will be instituted as soon as she has recovered from the immediate operation.

The position of the tumor is typical. Other less frequent localities are the stomach and rectum. Intussusception is a rather common condition in childhood and causes about 33 per cent of intestinal obstructions. Over one half of the cases come within the first year. In later years it is seen less often. In cases where the obstruction of the bowel is not complete as in this instance spontaneous sloughing of the mass has been recorded.

Intussusception in the adult is a rather rare condition. This is especially true of multiple intussusceptions. The exciting factor is usually a tumor in the wall of the terminal ileum or an ulceration in the same position. The mechanics of the formation are not definitely understood. However, in this case it is probable that the primary inflammation was the tumor mass through the ileocecal valve the secondary enteric inflammation taking place after the tumor mass was in place in the large bowel.

diaphragm muscles containing the blood vessels and vagus transmitting power and current

Consider the nerve as the electric wiring making direct and indirect connections under cover and along the structures

Now I am fully conscious of the fact that blending of anatomy and architecture is opposed of course to all canons of art but its advantage is taken of some structural scheme the less mature surgeon can offer to every patient a greater protection to voice and breathing. This is why our suspension technic described in *Pacific Coast number SURGICAL CLINICS OF NORTH AMERICA* October 1927 is of special advantage

When he has operated and the patient has become voiceless and has obstructed breathing the surgeon will ask himself does a true paralysis really exist that is is there a true bilateral paralysis with permanent injury with the usual fixed midline position of the cord. This lesion is a real disaster. It requires repair work on the cord or some anastomosis between the recurrent laryngeal nerve and the spinal accessory or decussation noni or as Billance of London England advocates an anastomosis of the recurrent nerve to the phrenic nerve. He may ask

Is this merely a temporary injury that is only due to pressure and edema or a torsion injury and the cord the cadaveric position. Here the prognosis is favorable. The vocal cords are the diaphragm. Beside the vocal cords the respiratory symptoms accompanying complete or partial paralysis of the recurrent laryngeal nerve correspond to the degree of injury on the same side of the chest. It is like puncturing the swim bladders of fish—it incapacitates them for maintaining depth. In the human the normal depth of breathing is lost and the patient develops respiratory complications as infection pneumonia—usually drawn in in their fluids. This is the best proof that the larynx really is a part of the respiratory apparatus. Mayo Brewster Guthrie Pemberton and Lehigh all have advocated certain principles that furnish the greatest degree of protection to the recurrent laryngeal nerve.

We had fully anticipated doing an anastomosis of the recurrent laryngeal nerve to the phrenic nerve on this patient this morn-

- P G rg P ly f th L ft R t La y g f N rv th M t l
 St J Am Med A oc Ap 119 1924
- M ph Alb t B Th l ry Tly d S g v N th t M d
 F bru y 1928
- M h Th Earth Cl ged by H ma A t
- McC ll m d S mm d Th N K l lg f N t t
- Kl pp Ed d J M lt pl St K d S g Cl f N th A
 F b rv 19 6
- Fra C H T tm t f P ly f R cu t Lary g f N rv by
 N rv A t A l f S g ry F bru rv 1924
- K r W ll m J S rvey N rth t M d l 1919
- B ll t P f A F h B ll gh W h

ing but you will notice this low grade type of infection some little distance from her tracheotomy wound. This infection is a contraindication to plastic nerve surgery therefore we will clean up this infection see that the tracheotomy opening is working again and then do our plastic surgery.

There are many different measures advocated for the management of cases of this type as dilatation of the glottis with bougies giving only temporary relief. Ballance of London has noted some degree of recovery of function by an anastomosis of the recurrent laryngeal nerve to the phrenic nerve. Frazier recommends end to end sutures. Electromyography always a nerve predominantly motor in function. The right descending hypoglossal both from anatomic and physiologic consideration seems to be ideal. Stealing the nerve supply of the sternohyoid and sternothyroid muscles is not a serious crime while taking the spinal accessory cripples the trapezius and sternocleidomastoid muscles. Equally interesting is ventriculoectomy—removing one cord and the adjacent ventricular floor. This is the scheme that Blattenburg has worked out so ingeniously in the lower animals. He takes an ordinary dental burr with special handling and places the burr on the outside of the vocal cord. The motion of the burr tucks or puckers up a little mucous membrane. The cicatricial tissue that follows retracts the cord from the midline and creates a breathing space. Of course this is not practical or advisable as every human patient is entitled to multiple trial of nerve anastomosis before resorting to partial or complete destruction of the cord.

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A. M. I. d. O. HA. d. H. SE. D. SE. W. H. G. C. H. EG.

MULTIPLE ULCERATED AREAS WITH OBSTRUCTION OF SMALL INTESTINES DUE TO ASCARIS LUMBRICOIDES

GENTLEMEN This is the case of a Japanese woman husband
and three children living and well Mother died of typhoid
Two sister and one brother living and well

Chief Complaint —The mother died of typhoid 30 days
before the child was born. The child was born with
a small amount of blood in the stool.

The child was born with a small amount of blood in the stool.
The child was born with a small amount of blood in the stool.

When the child was born, the mother was very ill.
The child was born with a small amount of blood in the stool.
The child was born with a small amount of blood in the stool.

Physical Examination —A small amount of blood in the stool.
The child was born with a small amount of blood in the stool.
The child was born with a small amount of blood in the stool.

History —The child was born with a small amount of blood in the stool.
The child was born with a small amount of blood in the stool.
The child was born with a small amount of blood in the stool.

Ralph S. Smith



F 348—M lt pl l d with bt t f m ll t t
 d t Aca l mb d h g th g cal gn fica ce f pa t m
 th h m l t

As we go over this patient's abdomen we find it flat. No roe spots or rigidity but on deep palpation she complains of pain especially on the whole right side. As we watch the abdomen during this period of abdominal pain we note an obstructive peristaltic wave such as we see in intestinal obstruction.

As we review the many causes of intestinal obstruction let us not forget the possibility of *Ascaris lumbricoides*. When I was a student the French writers Chauffard, Marie and Fanchon and later Oler put considerable stress on this remarkable condition. They used to call it typholumbricosis. Let us still bear in mind a first cousin of this condition exists today. I am firmly convinced that for a long time this patient has been suffering from an intestinal inflammation and a partial intestinal obstruction due to the presence of these parasites.

As you ride up the Pacific Coast Highway you will notice in Puavallup and other beautiful fertile valleys thousands of Japanese men, women and children down on the hands and knees planting weeds in the truck garden tract. No union hours govern their time. Early in the morning and late after sunset you can find them to work and this explains in a measure why this race succeeds so well.

Their habits of cleanliness in their home are very good. However in the field they are exposed to danger of natural infection through hands and feet with ova and embryos.

Now if you review the development of a carides you can appreciate the surgical significance. You know that in order that an embryo in ova is developed by the female in the intestinal tract of the host may develop sufficient access to oxygen necessary. Hence the development of the embryo can occur only outside of the animal body.

The all would be fertilized during the winter with the warm rain and sunshine and with a generous supply of oxygen a rapid development of the oocyst and cell formation of a motile embryo. It briefly explains in some degree the ezootic current of cancer infection of the Japanese people and therefore not necessarily limited to the Japanese race.

ISLANDS OF TOXIC GOITER TISSUE. RECURRENCE OF SYMPTOMS OF EXOPHTHALMIC GOITER EIGHT MONTHS AFTER THYROIDECTOMY

M s L g f ty s t ed tl l p t l pl g f
 f ympt m f phth l g t Som t g h t l d 1500 ml
 lse h d bmtt f t th J pe t Sh t rned h m h p
 f l th t h perm tly ed Y se t h h d g f
 t ty d ex phth lm th t l t l f L g l l t
 d j t fi d p t



Fig 549—R f ph h lm g t d l d f h pe pl t
 thy d ght ppe pol

Operation We remove the somewhat adherent old scar. It is best to dissect and lift up the whole flap using our suspension technique that held the flap all up (see SURGICAL CLINICS OF NORTH AMERICA October 1927). We avoid going too deeply

Surgical Significance—We have the mechanic irritation and Menstruation has produced convulsions with extracts of a candle then it is no wonder that this woman is nervous has a tremor loss of weight and has so many symptoms resembling toxic goiter

With a light nitrous oxide anesthesia by Dr Egan our anesthesiologist we open the abdomen in the midline and there as we do we notice certain peculiar anatomic change the small intestines show inflammatory changes along the whole tract The first ulcerated and indurated area is near the cecum The large bowel cecum and appendix are normal but see these multiple ulcers in the small gut They are not tubercular or typhoid though you can see why this condition was called typholulcerosis To touch they remind you of the type of pathology found in pyloric stenosis in infants Nature has protected these bowel by apparently increasing the muscle coats See each mass from 2 to 3 inches long We do not see any peritoneal scar tissue such as we see in duodenal ulcer

What we will do temporarily is an operation like we do in acute intestinal obstruction Select a place above the ulcerated areas and slip in a small tube exactly as we do for acute intestinal obstruction This operation for intestinal obstruction symptom and not a surgical method of removing worms The worms are securely entrenched but after following anesthesia they will pass out through this opening or by rectum I have found them in a case of strangulated hernia rolled into a mass like so much putty There as I open the bowel I pass out a typical parasite of this type Early diagnosis and medical treatment would have saved this woman from such a disaster but Dr Kuntz did not see her until too late After inserting our rubber tube we draw the tube through the mass of mucus and the lumen of this fistula the bile runs in the usual way and the patient will be given some light glucosamine in this typical case of intestinal obstruction

behind the trachea it seems clear of retrotracheal segments of toxic gland. Now instead of cutting the ribbon muscles transversely we will make a button hole slit up in the vicinity of the superior pole separating longitudinally the muscles with these small re-tractions. We approach the area of toxic thyroid tissue just as



Fig. 1. — Japanese type of toxic goiter. The patient is shown from the front, and the surgeon is performing an operation on the neck area. The surgical field is exposed, and the surgeon's hands are visible manipulating the tissue.

sc uts app oach a fortified island come in from all directions and determine the best method of attack.

As you may readily see nature seems to have exaggerated a large mass of gland and note this distinct capsule

into the old scar By selecting the proper line cleavage we have a splendid flap exposure without one metallic instrument in the wound There by this extreme hi h flap dissection you can easily



Fig 50—Sh go an mal lying d n Af som h t vig rou
se f ll xh ted co d t (Co rtes f D J W h lku)

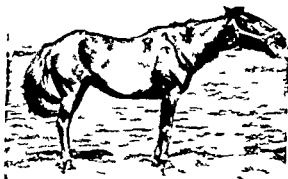


Fig 551—Sta d g po t h w go mal f bei g sed by
tt g f 100 d (C rt sv f D J W kalku)

fe l and ee the contour of this i land of toxic g t tis u at
the i ht superior pole No th r i land of hyperpl tic tis ue
can be f lt an le n a I pres with the i p f m l fing r

of thyroid gland—this does give patients the most wonderful results in the entire field of surgery.

It is not of interest to you to review regeneration of the thyroid gland so brilliantly worked out by Marine Horsley Halstead and Else of our own Pacific Northwest.

What interests the practical surgeon is what to do with these remaining island or area of regenerated toxic thyroid gland tissue. Where recurrence exists with symptoms you may give Luol's solution always hopeful of course of adjusting and maintaining normal thyroid function but really with the object of preparing a toxic thyroid patient like this one for a second operation.

As in intestinal obstruction with alarming symptom following an apparently successful laparotomy go in and relieve the patient and yourself.

I speak of the centers of thyroid regeneration as islands of toxic tissue. It would seem that the same amount of thyroid tissue left or smeared over a flat surface does not give the degree of trouble as when massed as a mound or fortification especially is this true when in the neighborhood of a good blood supply.

It is evident that every cell makes a struggle for life and develops as a definite resistance and occasionally assumes a different or dual function. We see this following the Coffey operation for transplantation of the ureter into the rectum after a short time the rectum learns to hold the urine instead of absorbing it.

It makes little difference whichever it is a thyroid cell covered by a mass of sea urchins or a pine cone covered by moss and rubbish. The very crowded condition furnishes a resistance that apparently seems to concentrate their potential power. Let either one be given the proper element for growth and they will ultimately produce thyron or a stately pine.

We know it is a fight that the crowded tree that has put up the hardest fight to get light is the one that grows and grows and becomes the giant of our great forest and interesting it is that many of them are found on the island that dot the Pacific

We peel off this tissue covering the gland with this peeler which is merely a curved retractor sharpened to a safe degree. If you go boldly into this securely entrenched gland with this generous vascular supply you often get a frightful hemorrhage which masks your operative field making it difficult to judge the exact amount of thyroid tissue. You see we have splendid exposure and a dry field and we can plainly see the segment of toxic thyroid gland. We clamp off the right superior thyroid artery, remove the segment of the gland, put in a few stitches to control all bleeding and I assure you we have removed the



Fig. 3.—A high magnification of the thyroid gland showing the segment of the gland being removed. The gland is well exposed, and the surgical field is dry.

woman trouble for all time. We will let the ribbed muscle drop back into place. Then we will lose this bit of it with catgut sutures. We will not drain this case. It is not a fur, but our or later than this. Rather, if serum rubrum will insert a grooved dissector.

Comment.—The upper pole of the thyroid gland is the segment that seems to be the most difficult to remove. It is these results of the gland that occasionally make the medical man accuse the surgeon of not rendering the pharynx the best of good results. Complete cure. Here we have a look at the case. The complete removal of the parathyroid glands is the most important

CLINIC OF DR CHARLES E PHILLIPS

HOLLYWOOD HOSPITAL

DIVERTICULITIS OF THE SIGMOID

Complications Pelvic Abscess Septicemia Intestinal Obstruction Ileovesical Fistula

THE patient was referred to me by Dr A Elmer Belt whose able urologic study and assistance contributed greatly to her recovery. It illustrates what may be accomplished by radical surgery in apparently hopeless conditions.



coast. Cell plants and animal life seem to change habits. Marsh the naturalist tells us that the smallest twig of precious coral thrown back into the seas attaches itself to the bottom of the sea or to a rock and grows as well as on its native stem. He also describes a New Zealand bird originally granivorous and insectivorous that becomes carnivorous from the want of its natural food supply and develops new habits of tearing the fleece from the backs of sheep in order to feed upon living flesh.

It has been shown that you can take the Shetland pony and Orkney Island horses that have degenerated in size and by changing their environments and with an increase of food supply found in our western field they will grow larger each succeeding generation.

I know this may appear a little foreign to the subject but my motive is to impress the importance of removing these islands of toxic thyroid tissue especially at the superior pole. When the blood supply is most generous look out for an island of thyroid cells. That group of cells will grow in the ophthalmic case and finally give the patient trouble.

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Fg 56

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cautery Following the diversion of the intestinal contents an accumulation formed in Douglas pouch

October 10 1924 the patient was given another anesthetic and a posterior colpotomy was done with the evacuation of about an ounce of pus A rubber tube drain was inserted from the vaginal vault

Following these operations the patient showed a gradual improvement in strength and general condition The pelvis

7—x Ray m t M h 20 1925 h b m j t f
t g w th l part f g m o d

abscess cleared up The sinus leading to the lower portion of the sigmoid persisted and discharged a small amount of mucopus She left the hospital October 23 1924

March 17 1925 the patient was readmitted to the hospital and on the following day under gas oxygen anesthesia the sinus leading down to the affected portion of the sigmoid was resected It was found that a considerable amount of the sigmoid had been destroyed by the inflammatory reaction By mobilizin

th pelvis th left thigh th right thigh Examined the first
 hind markedly the presence of the first
 met The the the the the
 distal be the the the the
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 Ray (Fig 5 6) the the the the
 into the bladder the the the the the
 small testis

I saw the patient first on August 29, 1974 and concurred in the decision. On the following day under gas oxygen anesthesia we explored the lower abdomen through a midline supra pubic incision. In the peritoneum massed with adhesions was found a loop of ileum firmly adherent and spontaneously antomosed to the posterior surface of the bladder just to the left of the fundus. This was separated with difficulty. The opening of the ileum was closed. A drain was inserted to the opening in the bladder. No attempt was made to close the bladder opening. The mass in the pelvis was then explored and a walled off abscess was found surrounding the sigmoid. This was drained by several large soft rubber fenestrated tubes. These were brought out through the lower end of the incision. The patient had a very stormy time for the first few hours but after that a decided improvement took place. The chill stopped. Kidney function improved and following the insertion of an indwelling catheter by Dr. Belt the bladder infection rapidly improved.

The amount of drainage from the rubber drains inserted into the pelvis was large and full gradually changing from a gangrenous to a fecal character. This showed unmistakably that the involved portion of the sigmoid had given way and the nature fecal current was coming through the wound. It was evident that further work was necessary before a cure could be effected. The patient went home for a while on September 19, 1974 to relieve the monotony of hospital routine. She readmitted September 25th and on the following day under gas-oxygen anesthesia a Mikulicz colotomy was performed. This was done to separate the involved portion of the bowel until it would recover or be resected by open incisions.

On the following day the loop was opened with the tube.

cautery. Following the diversion of the intestinal contents an accumulation formed in Douglas pouch.

October 10, 1924 the patient was given another anesthetic and a posterior colpotomy was done with the evacuation of about an ounce of pus. A rubber tube drain was inserted from the vaginal vault.

Following these operations the patient showed a gradual improvement in strength and general condition. The pelvis

Fig. 557—x Ray examination of the sigmoid. The sigmoid is seen in the lower portion of the pelvis. The diverticulum is seen as a small, rounded, air-filled sac, protruding from the sigmoid. The diverticulum is located in the lower portion of the sigmoid, just above the rectum. The diverticulum is filled with air, and the surrounding tissue is inflamed. The diverticulum is located in the lower portion of the sigmoid, just above the rectum. The diverticulum is filled with air, and the surrounding tissue is inflamed.

abscess cleared up. The sinus leading to the lower portion of the sigmoid persisted and discharged a small amount of mucopus. She left the hospital October 23, 1924.

March 17, 1925 the patient was readmitted to the hospital and on the following day under gas-oxygen anesthesia the sinus leading down to the affected portion of the sigmoid was resected. It was found that a considerable amount of the sigmoid had been destroyed by the inflammatory reaction. By mobilizing

the upper and lower portions of the sigmoid it was found that about 7 inches of the bowel including the destroyed and badly damaged portions could be resected and still sufficient length be retained to approximate the end. As there was not sufficient length left to deliver it from the wound an anastomosis was performed by means of a large Murphy button. A large sized rectal tube was passed up the rectum and fastened through the

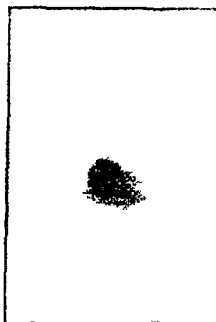


Fig 58 B m m a h d m g e d g m t b t m l l p a g l d g
f m c t m t g m d

fenestrum of the button. The button was closed and the tension was enforced by a firm interrupted suture. The peritoneal dressing was further reinforced by omentum.

The button was fastened by fastening the rectal tube to the thin near the anus. The abdominal wound was closed with a nap.

This was an heroic attempt to cure the patient.

lower intestinal segment. Without it the patient was doomed to the inconveniences of a colostomy. Persistent nausea followed and the patient's condition was uncertain for a day or two. Considerable doubt existed in my mind as to the healing because of the tension required to approximate the sigmoid and rectum. Thirteen days later the rectal tube progressed downward about an inch. I was uncertain whether this denoted a closure of the

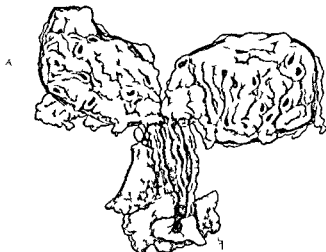


Fig. 559 — A diverticulum of the sigmoid colon. The diverticulum is shown as a pouch-like structure protruding from the main body of the colon. The illustration is labeled with 'A' in the upper left corner and 'F' in the lower right corner.

anastomosis and that the point of junction had settled deep into the pelvis or that the upper segment had become detached. As there were no untoward symptoms I concluded that the line of anastomosis had healed. A few days later a small amount of gas was admitted and the rectal tube with the attachment button was moved by slightly dilating the sphincter

and The continuity of the lower segment of the bowel was now shown by flushing it with solution. The abdominal wound healed without much difficulty. The patient returned home April 24, 1925.

After a few weeks several attempts were made to break down the spur dividing the proximal and distal segments of the sigmoid. On account of the thickening and contraction of the bowel this was not possible.

She was readmitted to the hospital November 10, 1925, for a closure of the colostomy opening. On the following day under nitrous oxide-oxygen anesthesia an elliptic incision was made around the colostomy opening and the abdomen opened. The bowel was freed. The spur portion was excised and an end-to-end anastomosis was performed by suture. The line of anastomosis was reinforced by omentum sewed over it. The reconstructed portion below was examined and found to be satisfactory. The abdomen was closed with drainage. The patient made an uninterrupted recovery. Bowel movements were resumed in a normal manner. She was discharged from the hospital December 8, 1925. She has been perfectly well since that time suffering no untoward effects from the harrowing experience.

The lesson to be drawn is that no case is too desperate to be remedied by good team work and rational surgery.

CLINIC OF DR. I. W. ROCKEY

GOOD SAMARITAN HOSPITAL PORTLAND OREGON

REPAIR OF EPISPADIAS AND EXSTROPHY OF THE BLADDER

THAT incontinence of the urine due to absence of the urinary sphincters might be remedied by transplantation of the gracilis muscle was demonstrated by the report of Deming¹ in 1926. Since this time numerous others have reported similar successes. To these I wish to add a case in which there existed a complete epispadias with entire lack of any urinary sphincter which was successfully treated by the transplantation of the gracilis muscle. Of course here it was necessary to form a urethra before a sphincter could be placed about it.

C I—C M g f J ly 1926 F th m th
d a t g fift y l g d ll N th h ld
A m l h ld ll p pt f th l l d t G l h lth
l y good It t d b th th h p d fct t oof
be g b t H h h d t l f th h p d h f t
Ge l xam t ly g t Loc l B h t l th
t m wh h pp m l Th f t th p All th t
ca ily b f tl p th gl d th b f th p ll d t
th ght d b k U th l w d p th d m f th rud m ta y
p Th p p l t ly th t l d Wh th pe
pull d t h f l h p d pe g bo th pe h h t d
int th bl dd W ld ly look d tly t th bl dd d t
po t w ll Th t b f y ry ph t

First operation (July 22, 1926) Vertical incisions were made along either side of the open posterior wall of the urethra. These were continued up over the pubes and a flap was turned down from the pubic area into the abdomen and sutured to the posterior

D m g C L T pl tat f G l M scl f I co t ce f
U J Am M f A soc 86-822 M h 20 19 6

wall of the urethra on each side thus forming a skin covered anterior wall to the urethra. This flap was made long enough to turn back on itself as far as the base of the glans penis. All stitches were mattress suture of No 000 chromic catgut medium hard. The skin of the shaft of the penis was now drawn around and fastened over the newly formed urethra up to the point of the glans. The external stitches were all of fine black silk. Thus a new urethra was formed by this flap the inside being lined with skin from the pubes the outside from the shaft of the penis. An *inlaying catheter* was fastened into the bladder.

There was primary union. He had good urethra clear to the end of the penis but had no urinary control whatever.

Second operation (October 3 1921) Transverse incision made across the pubes. Both ends of this incision curved rather sharply downward to facilitate plastic closure of the anterior wall of shaft of penis. The shaft of the penis was exposed through this incision and with great care the urethra was dissected free without any opening being made in it. The dissection was simple in front but was difficult in the back as the urethra intimately adherent to the corpora cavernosa. When this had been accomplished the skin incision was extended down the inner aspect of the right thigh to just above the knee. The fascia of the thigh was opened and the gracilis muscle dissected free great care being taken to preserve the integrity of its nerve and blood supply. The two nerves which enter the muscle were easily identified. The upper nerve and its branches were freed of connective tissue attachments below so that the muscle could be turned upward. The muscle was dissected just below the lower nerve supply. The muscle was so turned upward to attempt being made to preserve the lower nerve. The muscle was passed through below the urethra and allowed to hang around the urethra and sutured back to its insertion with the gracilis muscle. The interrupted No 00 chromic catgut sutures. During this stitching the catheter which had been placed through the urethra was removed in order to hold the muscle more firmly against the urethra. The subcutaneous tissues were so approximated with No 00 chromic catgut as to leave a narrow channel between the

transversely suprapubically was now approximated vertically thus lengthening the shaft of the penis anteriorly. The fascia of the thigh closed with the same material. Interrupted silkworm gut in the skin. Catheter replaced without difficulty to the bladder with the aid of a stilet.

Healed by primary union. Examination in January 1928. He had developed fair urinary control but it was a definite effort for him. He could walk about and hold the urine for two hours but if he ran or played he would leak some of the urine although not all of it. Examination showed that there was contraction of the scar which extended across the right groin. This was slightly thickened forming a keloid.

Operation (February 1, 1928). Transverse suprapubic incision extending out onto the right thigh excising 3 inches of the old scar which was a keloid. The incision extended down to the urethra just at the bladder neck exposing the gracilis muscle which had been transplanted. A catheter was passed into the bladder through the penis and then No. 0 chromic catgut stitches were placed in such a manner as to tighten the gracilis muscle which formed this phincter around the urethra. This was really a puckering of the upper arm of the loop. Subcutaneous tissues closed with No. 00 plain catgut. The contracted scar in the groin was now lengthened in the following manner. A vertical cut was made down and a similar one upward each 1 inch in length. These cuts were made 1 inch apart and the incision closed in the opposite direction thus lengthening the incision a distance of 1 inch. Closure with interrupted silkworm gut.

A fine healing was by primary union. Following this operation he developed good urinary control. He was able to run and play without any leaking and could go for three hours without voiding. His bladder capacity increased to 6 ounces. When last seen April 13, 1928, he was able to stop and start the stream on command and hold good control.

Comment. Before the knowledge of the pubis turned in to form the urethra, a urologist who said that the pubis had been pulled probably developed in the urethra

later could be eradicated at that time by the application of radium

This fortunate result suggested the possibility of using the same method in exstrophy of the bladder the only additional steps necessary being the replacement of the bladder in the abdomen

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560) Th m th t tes th t th mbl l d m th t p p rt



Fig 560—Sh g bse f mblcu so t d w h t phy f th
bl dd

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bladd th p j t h h k t f h bey d th m l
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ff t th p (F g 561) Th m l y h t t d d b th t
cam ff d ec ly bo h Th l l h g un l l lth gh
th y be p lled d w h sc m Th h l bl dd p j bo
th l l f th bd m Th d d d ymph f h p be ld b
f l t w ll t t h d f h bl dd w ll h h d graph
(F g 56) Th l ft w d d fec u gul f th b d n
wa d wh th f sc wh tsoev Wh th h ld ed th
eg b lg d f rw t p m ly Th h ld l l h h d h t
t pl ed t th t m b seemed m h mp h ld



Fig 561—E t phy f bl dd w h mpl t p pad



Fig 562—Rad g ph h w g d sepa t f p b bo

fi t b ad t f ld th bl dd t th bd co d t ec t t
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 a ee mm d l

Operation (January 26 1928) A horizontal incision was made just outside the true bladder wall taking in a small amount of skin but only that portion that seemed to be scar tissue and which I did not believe would contain hair follicle. This area of scar was about 1 inch in width. The incision was carried down to the bladder wall on the outside. The bladder was then inverted back into the abdominal cavity and the dissection carried farther to a point where the bladder could be mobilized from the fascia and was only supported by peritoneum on the sides and above. The bladder was now pushed back into the abdomen with the rubber bulb of a small syringe and the bladder wall sutured to ether over this with mattress suture of No 00 chromic catgut in such a way that none of the stitches entered that portion of the skin and mucous membrane that was going to be in the bladder cavity. The syringe bulb was now removed and the stitching continued farther down and a second layer of sutures of the same material were placed over the first thus giving a double suture line. In this way a true bladder cavity was formed. It had been my original plan to discontinue the operation at this point except the closure of the fascial defect but I thought how easy it was to continue the operation and form a new urethra. Lateral incisions were carried down the edge of the wide open urethra. A No 12 French catheter was now laid along this urethra into the bladder and the tissue was sutured over it. Two layers of suture were now placed in exactly the same manner as those described above in the closure of the bladder wall. An attempt was now made to close the defect in the fascia. This was very difficult to accomplish as the scar was a 4 inch projection at the symphysis. Finally the anterior sheaths of the rectus muscle were turned inward the forward side being turned back then the edge under the hinge. These were sutured to each other at the posterior

sheaths and below to the fibrous tissue that lay across where the bony symphysis should have been. No 0 chromic interrupted sutures were used entirely in this closure. Finally a solid wall was built up. The skin was now approximated in midline over this with interrupted silkworm gut. Really an apparently sufficient closure of the bladder, urethra and fascia had been accomplished. The catheter was fastened in place with silkworm gut.

Healing was by first intention except along the course of the urethra where the stitches gave way. The mother was instructed to insert the tip of a syringe into the opening at the base of the penis and to inject water to dilate the bladder. When last seen (April 13, 1928) the boy presented a well healed linear scar extending from the base of an open urethra up over the bladder. The bladder was entirely in the abdominal cavity and the bladder capacity had increased to 3 ounces. There existed a partial epispadias. The mother was instructed to continue the dilatation of the bladder and to return with the child in October.

Comment—By this operation a case of ectrophy of the bladder with epispadias has been reduced to a case of epispadias. I see no reason why a urethra may not be successfully constructed and a sphincter made for it from the gracilis muscle as was accomplished in the preceding case. Should these steps fail the ureters may still be implanted into the rectum but to have done so without an attempt at restoring the child to a normal condition rather than the unfortunate one of having him urinate through his rectum would have been to admit defeat.

CLINIC OF DR. HILLY B. SHERRY

PASADENA HOSPITAL

TWO CASES OF BENIGN INTESTINAL OBSTRUCTION

INTESTINAL obstruction is essentially a surgical condition. Leaving aside for the purposes of this discussion all types of partial or chronic obstruction including carcinoma, we still have a long list of causes of this condition. Acute intestinal obstruction may then be caused by

- 1 Foreign bodies gall stone parasites intestinal calculi and masses of fecal matter
- 2 By bands either caused by a previous inflammatory condition adhesion following operations or the various abnormal bands of fibrous tissue that result from developmental conditions
- 3 By internal hernia as through the inguinal or femoral rings the foramen of Winslow hernia into Douglas pouch projection into the broad ligament of the uterus through the diaphragm
- 4 By incarceration of the bowel in slits or holes as in the mesentery or omentum
- 5 By peritoneal adhesions a chronic peritonitis causing constriction of the lumen of the bowel without strangulation. One such case was reported by Welch in 1907 in which a chronic thickening of the wall of the peritoneal covering had caused obstruction by a complete infolding of the mucous lining of the bowels
- 6 Due to structure tuberculosis syphilis
- 7 Congenital stenosis
- 8 Compression by tumors from without
- 9 Intussusception
- 10 Volvulus

recognized though it was my impression that we were dealing with a perforated appendix with peritonitis. (However I mentioned to the intern at the time that I could not link up the diagnosis with the apparent anomaly the patient was suffering and mentioned the possibility of obstruction.)

As soon as possible the abdomen was opened through a right rectus incision. On opening the peritoneum evidence of obstruction appeared. The point of constriction presented itself dependent from this was a greenish sac about the size and shape of a bantam egg, following the band around the other end was found to arise from a dilated portion of the ileum. It was evident then that we were dealing with a Meckel's diverticulum and going further it was found that this long band had tied itself into a single knot around a loop of ileum in such a way and with such force that the distal free end became gangrenous. It was necessary to cut the band at the ileum and also at the point of constriction before it could be released. The bowel readily returned to normal. The abdomen was closed without drainage and the boy made an uneventful recovery being discharged from the hospital on July 25th two weeks later.

Comment—Meckel's diverticulum was probably first mentioned in the literature by Lavater in 1671 who reports seeing a case of this character in a patient in Paris. In 1701 Ruysch presented an admirable illustration of this malformation. But it is to Johann Friedrich Meckel known as the younger one of four anatomists all of the same family comprising grandfather, father and brother that we owe our best description of this condition. This he published in 1817.

Meckel's diverticulum is not particularly rare; it is a short wide protrusion which is found springing from the lower part of the ileum in about 2 per cent of the bodies examined. It is usually about 2 inches long and generally its end is free but occasionally adherent to the abdominal wall adjacent viscerum or to the mesentery. Most commonly it is found about 2 feet from the ileocecal junction though it has been found as close as 6 inches and as far as 12 feet. The diverticulum is due to

the persistence of the proximal portion of the vitelline (vitello-intestinal) duct which connect the primitive intestine of the embryo with the yolk sac. In shape it may be cylindrical conical or cord like.

Obstruction with Meckel's diverticulum is usually due to a loop of small bowel being incarcerated over a band the distal end of the band being adherent. The interest in the case just reported to me lies in the fact that the distal end of the diverticulum was free and of such a length that the obstruction had been caused by a definite knot around the gut.

A comprehensive report of obstruction by Meckel's diverticulum appears in Minnesota Medicine for August 1923 by Dr. James A. Johnson.

He says that Halstead estimates that in 991 cases of intestinal obstruction collected by various authors 6 per cent were caused by this remnant.

He recognizes four ways in which this may be caused:

1. When the diverticulum is attached to the abdominal wall *mesentery or sac which may cause an occlusion of the bowel or the small gut may twist itself about the cord.*

2. When long or the tip floats free in which case it is not infrequent for it to knot itself about the bowel as if carefully tied.

3. Invagination with intussusception.

4. The diverticulum or conical stalk may obstruct the bowel.

The most common form is brought about by the constricting band. Wellington collected 376 cases of Meckel's diverticulum and found 144 obstructed in this manner 39 by intussusception and 9 by volvulus.

The author points 3 cases in which the fibrous band was adherent to the mesentery and a loop of small bowel had become caught the second in which the band had adhered to the bottom of the sac of a scrotal hernia with strangulation of the bowel and the third in which the fibrous tip was adherent to the small bowel with resultant intussusception. The three cases recovered and he mentions that the mortality is high.

due to the fact that 6 per cent of obstructions are due to this condition. He makes a plea for a better recognition

P t	po t	m t l t y f	r
H l	tead		60 0
B	rd	d D l	68 1
			7 3

One case was found reported in the April 1923 number of the British Medical Journal which simulated appendicitis the author

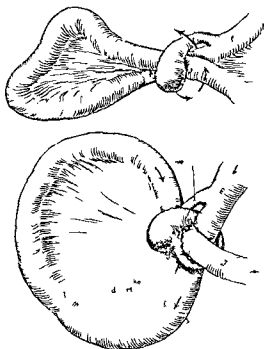


Fig 63—Ca c I A d t l m t y g f f l p f m l l b o l (T C C l l D f t h U m b l)

made a gridiron incision found it necessary to make a midline and make a plea for a midline incision in acute abdominal cases

In that a admirable book of T C Cullen Disease of the Umbilicus the report of a case in every way comparable to mine

with wonderful illustrations which I have taken the liberty of reproducing. The way in which the knot was tied and the bulbous tip of the diverticulum are identical, the only variation being



Fig. 564.—C. sc. I. M. k. l. d. vert. l. m. m. p. l. t. i. t. y. g. f. f. loop. f. mall. bo. l. (T. C. C. II. D. se. se. f. h. Umbilicu.)

in the treatment for I was fortunate in being able to release the obstruction without resection of the gut.

C. II.—A. m. f. ty. yea. h. u. m. p. l. g. f. pa. th.
 l. bd. m. l. ky. h. sea. d. m. t. g. f. f. d. y. d.
 t. t. ed. h. l. sad. H. f. l. F. bru. ry. 19. 5.
 H. g. h. f. flow. g. h. ry.
 Th. m. th. p. l. h. l. k. g. h. se. ca. t.
 t. p. ped. loose. bo. d. d. f. l. l. k. g. h. ht. l. f. h. bd. m. ss.
 sca. tl. g. f. l. g. h. h. h. d. pa. h. bd. m. d. ma. ked. se.
 d. g. t. d. t. l. h. h. d. b. k. h. pa. th. ry.
 Af. th. cid. t. ry. th. f. d. y. h. pat. t. ld. h.
 tta. k. f. pa. in. h. bd. m. se. m. g. local. h. m. sel. es. d. th.
 mb. l. cu. Th. se. l. kv. k. f. p. l. l. la. f. f. h. d. h.
 pass. ff.
 F. day. p. h. m. l. sa. h. m. th. pa. t. a. g. t. k.
 h. gl. g. h. se. f. be. d. g. h. l. ld. pa. h. gh.
 d. f. h. l. i. m. t. f. bl. l. h. m. p. h. f. h.

bl e m k b t co t ed t feel badly d gth l l d y Th t
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 t d y h t l l h d p n l th t ght took ca t l th l
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 pa m f pa th l y f l l w g t l se t d d w th m t g
 f b l th p t l l t d m t h te d f l g r d
 t Th f l l o g d y h l l e d a phy ho d se ed l m p h
 b d m c th p t t g t p a n d w t k f e y l
 g wh ch h ed b t r u t t t t f th m N b s m th al
 w t t p t d Th pat t s t k t th h p t l d g th f
 day th llood th t l d b o l m m t p t
 b e f m e n t e d th m
 H p a t h t r y f t E g l t y g h h l t t k f f
 h s a y t w a n h g h w h h th d g l a t y p l l l t h h



Fig 565—C e H Sp m m l p p d (D w g by P S D)

took pat t d h l f y e a t co f m f m th t t m h h
 h d t b l th h l b t h d m f t l o c l g t l f d th
 m b l H f d th t t f d d s a g d u h p p l w f r u t
 c a b b a g m l k l f e d f o o d H w l y t b l d w i t h g h
 t m h d th f m t d p a h b w l s w t p a t d P
 t h p e l l h b l t t k f t p d y b l d
 h d h d j d

At the time I saw the patient he was lying in bed on his back in no apparent pain at that moment his eyes reacted to light and accommodation he had a few carious teeth his chest was clear throughout blood pressure 140/90 heart was normal in size with no murmur or aortic insufficiency his abdomen was

the point of interest there was no apparent distention but in the midline just above the umbilicus was a visible tumor mass which on palpation seemed to be about the size of an orange which could be moved slightly from side to side and was not particularly tender. There was no visible peritoneal fluid, no evidence of free fluid, no other masses palpable. The spleen was not enlarged, the liver dulness was not increased. Rectal examination was negative.

Urine—Specific gravity 1.021, albumin none, sugar none, casts occasional hyaline.

Blood—Red blood-cell 4,500,000, white blood-cell 8,700, hemoglobin 80 per cent.

x-ray—As mentioned.

The supposition was that we were dealing with an obstruction caused by malenarcy. Probably in the transverse colon operation was performed for relief. Fortunately the abdomen was opened through a right rectus incision, no free fluid was found, the transverse colon with this palpable mass was easily brought into the wound where it was found that the outer coat of the colon could be slipped back and forth over the mass which instead of being hard was resilient to the touch. After a little manipulation it was found that the mass within the colon could be moved toward the right. The right iliac fossa was then palpated and an absence of the cecum noted. It was then determined that we were dealing with an intussusception which was easily reduced. The cecum was brought into the wound and the specimen which I now show you replaced the appendix. Fortunately the edematous tissue did not involve the ileocecal junction and it was possible to remove the appendix with only a small part of the cecum. The minimal omentum and an uneventful recovery and is well.

Comment—I have seen a good many different types of appendiceal neoplasms, including two small mucocystic at the tip but it has never been my fortune to have met one of this character before. Pathologically it is a retention cyst or mucocele. This specimen measured 9×3 cm. as filled with a clear mucoid like material and microscopically contained malignant

An excellent description of this type of appendix is given in Kelly's Vermiform Appendix under the term retention cyst. The size and position of the cyst he says are dependent on the point of constriction whether at Gerlach's valve or distal to it. They are usually cylindrical in shape and vary from the size of a lead pencil to 1 to 3 cc. Sonnenberg refers to one 14 cm in length and 21 cm in greatest circumference. Virchow describes an appendix which was as large as a fist and Elbe refers to one removed from a woman of fifty two which was as large as a child's head $5\frac{1}{2} \times 7\frac{1}{2}$ inches.

Pathologically it begins by an occlusion at some point in the appendix with a mucous discharge which becomes watery and later mucoid. Adhesions on the peritoneal surface are rare.

With reference to the rôle the appendix plays in intussusception we glean the following from Vol. VI of Keen's Surgery in 1911. Moschowitz gave the details of a personal case and states that it is the only one observed in 500 cases of appendicitis at the Mt. Sinai Hospital in the eleven years preceding.

There are three types:

1. Partial intussusception. There were up to 1913 8 cases of this type recorded.

2. Total intussusception in which the whole appendix is inverted like the finger of a glove. 4 cases reported.

3. In which the appendix acts as a foreign body finally resulting in ileocolic intussusception. 16 cases.

Spurney and Nyquist reported one case in the Ohio Medical Journal for 1922. I have been unable to secure.

M. H. Bigg in Surgery, Gynecology and Obstetrics for November 1921 also reports case due to tumor.

In the British Medical Journal for October 1924 J. Gayme Jones in an article on the general subject of intussusception states that it is interesting to note that a pathologic condition of the appendix is but seldom to be found as the cause of the trouble. Mentioning only one case of intussusception of cecum appendix and 1 $\frac{1}{2}$ inch of the ileum. This was reduced and an appendix 4×2 inches with the distal end containing fluid the lumen obliterated proximally. S. R. Moore.

Mechanical pathology always interests me—the why of a condition. Probably this man's pathology date back to his attack eighteen years ago. His digestive troubles were undoubtedly caused by the appendix which has lain latent for a long time. An injury sufficiently severe in character and force applied at just the right angle against the tip of this unyielding appendix was all that was necessary to initiate an invasion of the ileum and cecum. I cannot but feel that this occurred at his second injury when he noticed the acute pain on bending over. Could not the tip of this appendix impinging on the pelvic wall have initiated the intussusception and the castor oil have added the finishing touch?

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CLINIC OF DR. P. A. SMITH

HOLLYWOOD HOSPITAL

A CONSIDERATION OF GALL BLADDER SURGERY

GALL BLADDER surgery during the past ten years has seen the swing of the pendulum wide in each direction from the center of conservative and reasonable treatment of infection. Ten years ago in the larger clinics where the policy of gall bladder surgery is molded the cases ran 80 per cent drainage and 20 per cent removal. Because of a failure of symptomatic cure between 5 and 10 per cent of the patients treated by drainage for all types of gall bladder disease the pendulum has swung back so that three years ago in the same clinics the proportion of removal was 90 and the drainage 10. Removal of the infected gall bladder has undoubtedly cleared up the symptoms for which the patient was operated upon in a larger percentage of cases than the simple drainage.

In the past two or three years a new type of surgery of the biliary tract has come into prominence that of common duct obstruction without stone and without new growth. This difficulty following cholecystectomy has necessitated a secondary operation which has proved very difficult of performance and to have a very high mortality. In all of these cases that I have had an opportunity of studying the foramen of Winslow has been closed. The lumen of the common duct has been obliterated in more or less its entire length by a secondary contraction of the inflammatory exudate surrounding it. In view of the fact that the removal of the gall bladder is likely to be followed by a complication so serious that it necessitates a life saving operation while the secondary operation for drainage is simple and not attended with a high mortality the question arises whether

or not more care in the selection might not be used in the case to be drained and those to be removed or perhaps a change in technic in the gall bladder removal which would prevent the loss of the normal support of the common duct and the collapse of the foramen of Winslow and so hold the common duct out of the lake of plastic lymph that collects in the fossa between the right kidney and vertebral column so that the obstruction would not occur.

The steps in the ordinary technic in the gall bladder removal is a familiar one whether done from above or below. The cystic duct is isolated, ligated and dropped back. The cystic artery with its surrounding tissue is ligated and dropped back. The gall bladder is removed from its attachments to the liver and the raw surface covered over. It occurs to me that the isolation and the dropping back of the cystic duct take away the normal support of the common duct and allow the common duct to lie slack against the posterior peritoneum in the edge of the lesser omentum. The common duct is therefore lying in more or less of a pool of plastic lymph and is surrounded by a thick membrane which slowly constricts until the lumen of the duct becomes partially or wholly obliterated. This process is slow and our bad results do not become immediately manifest in a period of several months to two or three years so that the benefit by a change of technique must be necessary before very hard to prove. However in face of the fact that common duct surgery after cholecystectomy is becoming more and more necessary and the constant finding of the inflammatory obliteration of the duct adherent to the posterior peritoneum is to my mind justification for an attempt to leave the support of the common duct undisturbed in the removal of the gall bladder. In many cases it is a very simple procedure to cut the peritoneum of the gall bladder parallel to its attachment to the liver on its dorsal surface and from above down and peel out the gall bladder membrane beneath the cystic duct. The cystic duct then lies without contact from its surrounding tissue below the point of ligation so that the support of the cystic duct has the same position as the support of the

liver by the tissue intervening that it had from the gall bladder attachment to the liver. This support can be regulated by the nature or sutures between the stump of the duct and the liver. In cases in which the wall of the gall bladder is so thickened that it cannot be peeled from the liver in the manner described above a peritoneal cuff made from the lower anterior surface of the gall bladder continuous with the peritoneum of the cystic duct and this cuff is stitched to the denuded surface of the liver. Either one of these procedures does not lengthen the time of the gall bladder removal or add to its danger and except in the short fat patient with deep contracted gall bladder is of easy performance.

It seems to me that three distinct elements enter into the problem of election of operation. They may be alone or in any combination. Usually all three are present in the same case. They are

- 1 Mechanical obstruction of biliary passages
- 2 Infection of gall bladder wall
- 3 Infection of liver ducts

The mechanical obstruction unaccompanied by active infection of course is simple because it must be relieved mechanically and the operator chooses the way that is easiest for him to do.

No one will contend that the grossly infected gall bladder wall should be left under any circumstances that would permit of its removal.

In the presence of the third condition I think that whatever is done drainage of the liver ducts must be a part of the procedure.

This sounds very simple if these conditions would occur singly but in the nature of the development of gall bladder disease it is almost impossible to have a gall bladder condition demanding operation which does not have a combination of at least two of the three elements.

McArthur and Lobingier have reiterated for years the fact that the diseased gall bladder is only a small part of the general infection of the biliary tracts and that a routine operation

(if a routine operation is to be used) one that drains the bile ducts will effect a cure in a larger percentage of cases than one in which drainage is not considered. I am sure that they are right in this and I am also sure that many different surgical shifts may be used to accomplish a removal of the infected gall bladder wall and drain at the same time so that it will not be necessary to make a flat choice between cholecystectomy and cholecystotomy.

I should like to mention a change in method of separating the gall bladder from the liver that not only seems to make the removal technically much easier but also leaves the liver surface smooth avoiding the necessity of any sewing to cover the denuded surface. I am in a quandary whether to call it the hydrostatic method or the method of infiltration dissection either describes it. A 10 cc syringe full of salt solution is injected between the gall bladder and the liver under the reflection of the peritoneum which immediately balloons. Upon dividing the peritoneum the gall bladder is found to be separated entirely from the liver except for the peritoneum on either side which is divided without oozing. The solution under tension seems to separate the two structures in the normal plane that a knife or blunt dissection will not follow and it has been a great surprise to me to see how easily the old bladders adhere from chronic or repeated attacks of inflammation more than I do with the hydrostatic use of a little fluid.

CLINIC OF DR. GEORGE W. SWIFT

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SEATTLE WASHINGTON

THREE CASES OF SPINAL CORD TUMORS

THE differential diagnosis and localization of a spinal cord tumor may at times offer difficulties. It is for this reason that I am presenting *three* interesting cases of tumors of the spinal cord and its membranes.

Case I The first case brings up the question of atypical disseminated sclerosing spinal type or tumor of the spinal cord.

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192

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ld m y g P ges f ympt m—pa t t t At
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d bo l h h t th pp bl m S ral m th ft ti
set f tl p p t t b g t t th th l g w g tt g t f f a d
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Ph l E m f —A pal y g ma t tally bed ld Ab
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Serologi report h w s t ty l m phocyt th cerebrosp l fl d
pos e gl b lin egative W s term

Summary of the Case — We h ve here a history of pain in the
back and upper abdomen two year duration con t pati
pare thesia and paralysi of the spa tic type in both lower ex
tremities positi e signs of comp esion of the pinal cord at
about the level of the fifth thoracic segment There is also
pallor of the disks and line lateral m taismus The Queck n
stedt test is po tive and the cerebro pinal fluid is amber colored
there i l m phocyt i and increased globulin The ray doe
not show any bonv chan e

We must consider from a differential diagnostic standpoint
extradural pinal cord tumor extradural tuberculoma and the
pinal type of disseminated sclero with possible arachnoid
and dural adhe on givin u a subarachnoid pinal block
The probable diagnosis howe e i extradural tumor at bout
the le el of the fifth thoracic segment probably po tenor

Operation — Exploratory laminectomy June 7 19 at the
King County H pital Seattl Washington The b ck wa
prepared by cleansing three times with soap sauz scrub and
water two appl cations of alcohol and the entire n ld tre ted
twice with an alcoh lic preparati n of mercurochrom per
cent drapes applied I ci i n from the third thoracic spine to
th twelfth thoracic pine outlined Skin incised and bleed g
controlled Muscles and fascia separated from spinou processes
and bleed n controlled by h t gauze pack I tersp n l ca

ments severed spinous processes removed. Palpation within the incision revealed a firm globular mass to the left of the mid line between the third and fourth thoracic vertebral arches. On retracting the incision and exposing the mass it was found to be a globular bluish firm tumor extruding between the third and fourth thoracic arches. A thin pedicle extended inward. Removal of the third and fourth vertebral arches revealed a smaller tumor within and firmly adherent to the dura, the latter thickened and no pulsation visible or palpable. There were slight osteomyelitic changes in the vertebral arches above and below the tumor. On manipulating the tumor it ruptured revealing a soft reddish granular material. The tumor was easily removed. A thick fibrous membrane was dissected off the dura and the dura beneath this fibrous membrane was normally bluish and pulsation was visible.

Pathologic Report—Fibromyoma of inflammatory origin.

Subsequent Report—Four days following the operation the patient was able to detect sensation in the lower extremities. There was a gradual return of all the modalities of sensation beginning in the feet and gradually extending up toward the chest. The return of motor power has been somewhat slow but at the present time the patient is about the wheel in a wheelchair and is able to walk with the aid of a cane. There is no pain and the incision healed. May 9, 1928 patient is able to walk about and operates an elevator for six hours each day.

Case II—The second case which I will present to you is complicated by a severe anemia. The outward appearance of the patient to the with several blood pictures at once aroused the question as to whether or not we were dealing with pernicious anemia.

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 d mp weath Wh b d both l g j k d d h d t d y t d
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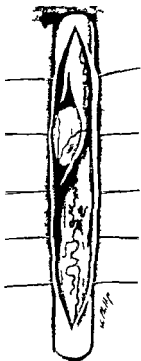


Fig 566—P d ce II p l (Se eco d f C se II)

Phy l Ex m n t o m—A ma t d ll w look g ld ly ma
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q l b t t pl Th bl t l kl l bl t l B b k d
Go d Th bd m l d m t l t At phy f b th
m f m dh d d th t m l f th n g h m
lght t phy th l ft h d G p k p lly th l ft h
ght h d d S sory i t b —d m h d t t l p d t m
p t d d r bl ty p t d l d g th th d th gm t
t fl h gh th ght d Ab t b t ry bl ty f m th t
t th t pe p t th l m N l cal t f th
t l l p t b d m t t d V b t ry bl t d m h d b l
th f th th p Sph t —ch t p t
Lab f y St d —L mb p t tt g f th t p P
30 mm w th m ry m m t F f b p l fl l
w th d fl d l l S d p m ry y ll w l T
f fl t d P t t p d p d t g t th l ft
h ld d h tw ll bl t f l th b l t l O k
t dt t t po t Ray f th k ll d p h d th
t l d t h l h d w ly th p l b h d p
S l g —Spo t g l t f th fl d w m g C ll 2
W na g t

Summary of the Case —Patient in left shoulder and chest walls for about two and a half years gradually increasing stiffness and weakness of both legs. Chronic constipation. Severe anemia. Neurologic findings of spinal cord compression in the upper thoracic segment. Positive Queckenstedt test.

Differential Diagnosis —Pernicious anemia with spinal cord degeneration. Malignancy with metastasis to the spinal cord. Spinal cord tumor extramedullary.

Probable Diagnosis —Extramedullary tumor of the spinal cord at about the level of the second and third thoracic segments, probably on the left side.

Operation —The first stage of an exploratory laminectomy was preceded by a direct blood transfusion. About 500 cc of whole blood was given. First stage laminectomy. Providence Hospital, November 3, 1927. Usual preparation, back cleansed with soap and water three times, alcohol applied twice, two applications of methocurochrome. Incision outlined from the seventh cervical to the fourth thoracic, drape applied. Skin incision

made and bleeding controlled. Muscles and fascia separated from the spinous processes, spines removed and vertebral arches removed. Considerable bleeding occurred at this stage which was partially controlled by hot pack, the muscles being soft and pliable. On exposure of the dura there were no visible pulsations or palpable masses. The dura was opened and in the upper angle of the incision the tumor was seen just above a ballooned-out pocket in the arachnoid. At this stage of the operation the patient's condition became somewhat serious and there were signs of impending shock. The incision was closed and the patient left the table in fair condition after stimulation and 1000 c.c. of Ringer's solution given subcutaneously.

Second stage November 10, 1927. Alcohol and tincture of iodine preparation. Incision extended up to include the fourth cervical. Dura opened, normal pulsations above with no pulsations below and what seemed to be a definite bulging of the arachnoid. Under the ballooned-out arachnoid an oblong, yellowish tumor could be seen about the size of a lima bean. This was lying on the left side of the spinal cord just under a spinal sensory root and was identified as the third thoracic sensory root. The arachnoid was perforated and what appeared to be an accumulation of cerebrospinal fluid was found to be the air which had been insufflated for diagnostic purposes. The tumor mass was easily shelled out from its capsule and removed with the exception of a small portion of its pedicle; this was adherent to the root on the left side. The incision was closed and the patient left the surgery in good condition.

Pathologic Report—Perineural fibroblastoma.

Subsequent Course—Convalescence has been slow. The patient rapidly cleared up and the sensory defects are now almost imperceptible. He has had a convalescence. Has been on the Murphy Minot diet. The blood picture on leaving the hospital showed hemoglobin 44, red blood cells 2,880,000, white blood cells 23,600. The wound has healed nicely and the patient is free from any pain. The latest hemoglobin estimation December 24, 1927, shows 50 per cent.

Case III—The third case in this series of tumors of the spinal cord is one of extreme interest for the reason that we were at a loss for some time to make an accurate localization of the neoplasm. After several careful neurologic examinations we decided that the tumor in all probability lay at the level of the tenth thoracic segment probably on the left side and slightly anterior. You will observe that there were no motor or sensory disturbances in this case. Summary of the case follows:

April 2, 1928 J. K. V. g. M. s. o. H. p. t. l. Sp. l. d. t. m. (See history of Case III)



Fig. 56.—J. K. V. g. M. s. o. H. p. t. l. Sp. l. d. t. m. (See history of Case III)

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 p. th. b. k. d. upp. bd. m. wh. h. se. m. d. t. d. t. d. t. th.
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 se. l. phy. d. h. p. t. w. th. l. f. U. bl. t. l. p.
 t. f. th. p. th. b. k. l. ght. t. j. ca. sed. p. th. p. h. rp.
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Ex. m. nat. —A. l. d. h. d. d. d. d. l. ped. wh. t.
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 —n. m. l. th. gh. t. S. so. m.—d. t. b. t. l. ght. t. l. d. p. se.
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gge t Slight fib l r t t h g f th scl th l t m
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Summary of the Case—History of severe pain in the back radiating into the left side only at duration. Negative motor and sensory finding. Questionable pyramidal tract and reflex *lutu bances* slightly tender tenth vertebral spinous process diminished vibratory sensibility below. Patient's general condition anemic undernourished worn out from lack of sleep. Spinal fluid finding strongly suggestive of tumor. In the east it was thought that the patient might be suffering from a retroperitoneal tumor with metastasis into the cord. His general condition suggested the possibility of this condition. However it was considered that he was probably suffering from a spinal cord tumor extramedullary lying opposite the tenth thoracic segment possibly slightly anterior. On the finding an exploratory laminectomy was recommended.

Operation—Exploratory laminectomy. Virginia Mason Hospital April 2, 1928. Patient is placed on his face the table elevated in the midline so that the back is given a slight anular latiss in the midline. The seventh cervical process was identified blue penciled and the twelfth dorsal likewise identified. Slight tenderness over the tenth dorsal process identified and a mark made about 2 inches posterior to this with a blue pen. The local anesthetic was applied in the probable location of the tumor. The back was cleaned with ether line over the entire posterior surface. The application of alcohol was then used to the light application of the force of iodine. Incision was made with a No. 11 scalpel. The first incision was pinous process to about the fourth dorsal process to the el and the process applied. The laminectomy was made and

bleeding controlled with hemostats and Andrews clips. Skin towels were then placed and the muscles covered from the spinous attachments on either side working from above downward and separating first on the left side then on the right and packing with long strip of gauze wrung out of hot Pinger's solution. The interspinous ligaments were then severed the self retaining retractor inserted in the upper and lower angles of the incision and the spinous processes then removed. The arches of the vertebrae were removed with the rongeurs making an exposure from about the twelfth dorsal to the seventh dorsal spines. After removing the arches of the vertebra and running the finger along the exposed posterior wall of the dura pulsations were felt above and below but there was a hard globular mass palpated just opposite the space between the sixth and seventh spinous processes. The ninth spinous process and arches were then removed and it was seen that we were dealing with a firm intradural tumor. All bleeding controlled with hot packs. Cotton padding was placed around the incision walling off all muscle areas the trough on either side was dried the dura incised and the incision carried above and below with right angle scissors. Four tension sutures were placed in the cut margins of the dura and in the upper angle of the wound a round pinkish tumor was seen lying to the left and somewhat anterior to the spinal cord just opposite the sixth and seventh vertebral bodies placing it in the region of the ninth and tenth thoracic segments. The posterior root of the ninth thoracic segment passed above and in front of the tumor while the tenth thoracic root passed below the tumor. The spinal cord was pushed to the right and the left lateral surface flattened and distinctly grooved by the tumor. Below the tumor the posterior spinal vertebral vessels were varicose. The arachnoid below the tumor mass ballooned out and had the appearance of a jelly like substance within its meshes. The arachnoid was nicked and there was an immediate gush of cerebrospinal fluid. Working away from the spinal cord the tumor was easily shelled out by nicking its capsule. There was no bleeding. The pedicle was dissected down the root was ligated above and below and the tumor removed without diffi-

culty. Slight capillary oozing was then controlled and the dura was closed with a continuous linen suture. Bellies of the cut muscles approximated the fascia sutured with interrupted sutures 1 cm apart. All bleeding controlled. Fine black linen sutures inserted 1 cm apart closed the subdermal layer. The final closure was made with straps 1 cm apart. Margins of the wound treated with tincture of iodine. Dressing applied and a thick padding with adhesive tape completed the dressing.

Following the operation the patient had complete relief from pain. He improved rapidly and was seemingly making very good progress until April 9th when he suddenly developed symptoms of pneumonia in the right chest. This was considered as a possible embolic pneumonia was treated as such and he gradually improved but on April 10th early in the morning the pulse suddenly became very rapid and irregular and signs of a pontile embolism made their appearance. He developed pto of the right lid, paralysis of the left side of the face, pyramidal tract signs and had difficulty in deglutition and respiration. The pupils were small almost pinpoint contraction and he was considered to have suffered from a pontile embolus. He rapidly developed coma and died in the afternoon. Postmortem could not be obtained.

Comment—These cases demonstrate the value of a careful history. In each case the onset was characterized by pain. This was of great value in giving a local clue as to the probable site of the tumor. In the third case it was very important inasmuch as the manometric tests did not show a positive spinal subarachnoid block and there were no sensory or motor disturbances. Had it not been for the careful elicitation of the initial root pain together with the other signs and findings from which the localization was made in all probability we could not have accurately localized the tumor.

The second point of interest is that in each case the cerebrospinal fluid was amber colored. There was an increase in lymphocyte in Cases I and III, a fairly common occurrence in spinal cord tumors. The Quincke test was positive in Cases I and II and negative in Case III. In the latter had a

very marked xanthochromia and pontineous coagulation of the cerebrospinal fluid yet were unable to demonstrate a positive Queckenstedt and the air which was insufflated traversed the spinal subarachnoid space and entered the ventricles. In the second case an insufflation of air was made and this demonstrated root pain and spinal subarachnoid obstruction the patient complaining of pain in the left shoulder and down the arm into the fingers.

CLINIC OF DRS ALANSON WEIKS AND C D DILLIAT

ST LUKE'S HOSPITAL SAN FRANCISCO

ARTERIOMESENTERIC OCCLUSION OF THE DUODENUM

T s p t t S t h m g t h t y f y H g
H m co pl g f t m a h t b l h h h h h d f t h l t
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lkal H h h d d f t m O y g h l S m t
h h d t t k f t m b d m l p th m t g H
p so se d h belly so h d t h t h w q t b o t h
d g os f p f t d l f t h t m h H w p t d by D
G ld h f d p f t th f t p t f t h d l m Th
d th l g t d l d t d t sely ft th
m f H l y p y l p l ty H h d th t my l
h h l d b o t t w m th
F l l g a t h h l l d l d t y t h g t h t h w h d t l
b t t m t h g w h t h p t d d h h m l f w t m l k
d t H d d f l y l l l g h t y d th d t b t y d t
w comp d by p se d m t g
H cam t D C p f f f xam t d th th p l p l
t h f d t l d t l l se d d Th t th
m d be g p b l f f t A ly f t h g t
y m d b t t h l t y l w both f t h f d m b l d
Th l t b l d th t l G t t t l h d
m l l g t d d t a t p h d t d f m t y th g h th
m d d l t h d f t h d d m Th p p o t l m l Th
l l th d d m Th p t t p t l
d t f b o t t d y th y l t l l f

In view of the past history which is so typical of an ulcer and in view of the perforation which is known to have occurred we feel that the diagnosis of duodenal ulcer is very probable especially since this patient had been allowed to retain teeth which so frequently are a source of infection that may be responsible for ulcers of the stomach and duodenum. More than once patients have come to our office complaining of stomach

trouble and are referred to a dentist for tooth extraction and we find that their ulcers set well without operation

This patient's symptoms however have persisted and he has not improved on an ulcer diet. There is no question about the deformity of the duodenum as seen in the x-ray and known that there has been operative interference in this region we must consider postoperative adhesions as being the cause of this man's symptoms. Last year we reported a series of cases in which abdominal adhesions had been the cause of very definite symptom. One of these cases had a typical ulcer history and had been diagnosed by a most competent internist as having a duodenal ulcer. He had a constant defect of the duodenum which was shown on three successive roentgenologic investigations but when he was operated upon only a fiddle-string adhesion in the region of the duodenum was discovered. His symptoms were immediately relieved upon cutting this adhesion.

As we see this patient he is of long slender build. His musculature is not very heavy. He might be called an asthenic type although his work is fairly heavy. These people are often viceroptic and we have had patients before of this type in whom the mesenteric of the intestine pulls across and occludes the second or third portion of the duodenum. They are more apt to have symptom of obstruction with distention of the stomach after meal pain and headache. These patients frequently learn that by pulling up on the abdomen with both hands below the umbilicus or by lying down their symptoms are relieved. When they lift up on the mass of intestine the tension on the mesentery is released and the gas and food are allowed to pass on. This patient has not noticed that his pain is relieved by lying down and vomiting has not been one of his prominent symptoms.

We will now make a high right abdominal incision. The fat very thin in mouth. The rectus muscle beneath is very poorly developed and we have a difficulty pulling the fibers away from the midline. The peritoneum opened without difficulty and immediately below the large stomach. The stomach is definitely dilated and the gall is picked up appearing a thicker

than normal. There is evidently some hypertrophy of the stomach muscle. There are a number of string and band like adhesions in the region of the duodenum which bind the duodenum to the region of the gall bladder and even to the free edge of the liver. Some of these are cut between ligatures. Other can be pushed aside with a sponge stick.

The antrum, pylorus and duodenum are now freed. We do not see the pyloric vein and in fact the whole pylorus and first part of the duodenum is greatly dilated. On feeling along the region where the pylorus should be there is a little thickening and induration. This is the greatly dilated pylorus and right next to this region is a little pale area which had been covered by adhesions and was probably the site of the former perforation. It is not indurated now.

Even though there are a number of adhesions it is remarkable that there are not more. Looking under the omentum and colon we see that the dilatation is carried down to the second portion of the duodenum but the jejunum is collapsed. On passing the finger below the jejunum and toward the right side one may pick up the mesentery. This is almost without fat and drags down in a rope like cord across the transverse portion of the duodenum. We may raise it without difficulty and immediately gas runs through into the jejunum. It is perfectly evident that here is the cause of an obstruction and we are surprised that the patient has not had more vomiting.

Various operations have been suggested to remedy this condition. The one that is probably the most popular is that of a duodenojejunosomy which was devised by Staveley in 1907 and consists of bringing the jejunum over either above or below the transverse mesocolon and anastomosing it to the dilated portion of the duodenum. This operation is not without danger however for occasionally the obstruction may continue due to involution at the site of the anastomosis.

In this case we prefer to perform a posterior gastroenterostomy on account of known former ulcer. We will now make our small incision in the transverse mesocolon and push through it a portion of the posterior surface of the stomach near the py-

lorus and holding it in a stomach clamp will now select a loop of jejunum and hold it in a clamp in apposition to the former. It is important to have the intestine open surgically. We use a fairly long loop. Recently we had occasion to take down a posterior gastroenterostomy for a marginal ulcer and the trouble and difficulty we had at that time owing to the use of another surgeon of an extremely short loop have decided us all ways to use a long loop.

We have now completed the anastomosis and anchored the stomach to the opening in the mesocolon. You notice that there is very little fat in the abdomen. These cases of arterioenteric ileus if taken when the symptoms are still mild are often cured medically by fattening the patient. When the mesentery is filled with fat there is more support to the intestine and less danger of occlusion of the duodenum.

Another operation that has been described by Kelly is the support and fixation of the hepatic flexure of the colon and the cecum as a means of relief of the enteroptosis. In this patient however we doubt whether such a procedure would be of value. The pathology which we have here has been blamed for acute dilatation of the stomach with all the symptoms that that include whether postoperative or after a meal.

We now close the abdomen without drainage and the patient will be sent to his room in good condition.

POSTOPERATIVE COURSE.—Following operation the patient had a moderate amount of hemorrhage from some small vessel which had apparently leaked at the site of the anastomosis. He was kept perfectly quiet and fluids withheld under which treatment the hemorrhage soon stopped. In thirteen days he was able to leave the hospital. Two months following his discharge from the hospital he reported to our office. He had been kept on an ulcer diet as a precautionary measure and had gained 5 pounds in weight. He felt very well and had no further attack. He was told to gradually return at regular intervals and to take plenty of exercise.

CLINIC OF DR. JOHN HOMEK WOOLSEY

UNIVERSITY OF CALIFORNIA HOSPITAL

GASTROSTOMY

GASTROSTOMY may be made a more simple procedure for the surgeon and less incapacitating to the patient. This same technic has undoubtedly been employed by others and Binnie describes a somewhat similar operation yet no harm will come from repetition and description of an excellent but apparently forgotten method. At the University of California Clinic we have for some time employed with great satisfaction the mushroom or so called Pezzer's self retaining catheter in several procedures among which is gastrostomy. The use of this type of catheter and a technic according to Stamm comprises the method. It is performed as follows:

Under local anesthesia a 6 cm. incision is made in the upper part of the left rectus muscle. After entrance to the peritoneal cavity the anterior wall of the stomach in the midfundic portion or even more proximal and midway between the lesser and greater curvatures is picked up by an Allis forceps. About this point three separate concentric purse string sutures of absorbable material are placed allowing the end to be located at different points of the circle. An incision is then made into the stomach and digital exploration or direct view by an endoscope employed if desired. A mushroom catheter F 24-27 is then passed into the gastric opening and drawn back so as to fit snugly against the gastric wall. The purse string sutures are separately tightened about the gastrostomy tube and tied. As each suture is tightened invagination of the stomach wall about the tube automatically takes place. The stomach is

then attached to the parietal peritoneum by two interrupted sutures of B silk so placed as to include both edges of the laparotomy wound and assist in closure of the peritoneum and posterior rectus sheath. A portion of omentum is placed about the gastropertoneal junction and then the remaining wound closure effected. A rubber cuff previously slipped over the catheter is now adjusted to the skin level and by means of a

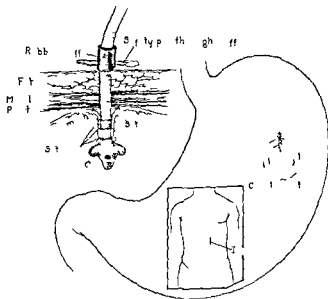


FIG. 569.—Gastrotomy and gastrotomy with pyloric fistula.

safety pin through the rubber cuff and adhesive is held in place. The patient is allowed to be up and about the following day and to leave the hospital in two to three days.

The advantages to the surgeon are an easy procedure under local anesthesia, the definite known length of tube to the stomach, the assistance in holding the stomach against the parietal wall for attachment and to prevent leakage into the peritoneal cavity by the original Stumm method. The disadvantages are

to the patient are less incapacitation and less pain due to the fact that ordinarily a great length of tube is left in the stomach undoubtedly reaching the pyloric canal or even the pylorus itself. Eventually if desired the catheter can be easily extracted or a new one easily inserted by the use of an obturator.

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RADICULITIS IN RELATION TO ABDOMINAL LESIONS

RADICULITIS is a symptom complex manifested by alterations of sensation or motor function which show by their distribution that the disease process is in the spinal root. Pain is the complaint.

Pain more often than any other subjective symptom brings a patient for consultation. Pain is a commonly understood and a commonly used term and yet many people employ other terms synonymously such as aching, distress, gnawing, burning, misery, etc. As physicians, interpreters of physiology and pathology we must be alert to interpret accurately the patient's method of expression or we fail in our duty. One cannot be content with the bare complaint of pain. Pain has many aspects and when completely recorded correct deductions usually follow. It is therefore necessary to ascertain the character, its time of occurrence, its relation to food intake, its relation to position and to exercise, its mode of onset, any tendency to recur in attack, its distribution as root, peripheral nerve or a local edematous ending, its radiation and finally its mode of relief.

Pain from a hollow viscus attempting to empty is cramp like in character. An inflammatory area gives a throbbing pain. An irritation of a nerve ending as in an ulcer, a pleurisy or a traumatic wound as a rule gives a burning or knife like pain. An irritation of a nerve along its course as in a so called neuralgia or a prolonged abnormal pressure upon nerve roots gives either an electric or shooting pain or a dull aching pain of varying degree. Thus the character of pain determines to a degree the location and cause.

Features such as muscle spasm, impaired mobility of a part, part of the body, disarrangement of physiologic func-

THE RADICULAR SYNDROME Hypertrophic Osteoarthritis of the Spine
L. C. THORNTON, M.D. Septembe 1918

tions loss or gain in body weight loss of body strength and laboratory procedures aid in arriving at a correct diagnosis

There is a tendency to follow shortcuts and when examining one area of the body to forget that it is only a part of the whole. The abuse of incomplete study of a patient has led to the point where the diagnosis chronic appendicitis is considered a ridiculous and where a prominent internist has said there is no such condition. With the complaint of pain the parts of the body supplied by the same nerves have been frequently overlooked as the seat of the pathology.

This patient is presented as illustration of the foregoing remarks. A male forty-five years who seven months ago while in the act of lifting a bar of cement and turning coincidentally to the left—projecting the body upon the pelvis and lower extremity—suffered a knife-like pain in the right lower lumbar region and subsequently a persisting dull low lumb pain. He immediately consulted a physician who strapped the low lumbar and sacro-iliac region with adhesive. The pain however persisted and was noted by the patient to be quite marked in the right inguinal region. The physician in attendance was therefore so impressed that he operated for a right inguinal hernia but found no unusual condition other than an early peritoneal bulge at the internal inguinal ring. The pain persisted till present and now after seven months the attending physician is planning to operate for a nerve caught in a suture.

The pain of a dull aching character increased to a sharp knife-like type at times by any motion of the lumbar spine lifting trailing at too close a sudden jar. It striking to note while placed in a reclining position the severe dull pain caused the patient to bend the top of the feet against the floor. The distribution of the pain is illustrated by the patient as an excellent illustration. Fig 569. A great left obturator foramen on a mattress placed upon the floor of the room. The patient stands with his back against the wall. You observe that he walks with his left lumbar slightly bent and his head inclined forward and with a bent right hip. He rises and it with

great care. All lumbar spine movements are limited to 10 per cent of normal. Hyperflexion and extension of the right thigh increase the pain.

There is a band like area of increased sensibility to pain and light touch stimuli over the skin supplied by the tenth dorsal to the second lumbar roots as illustrated in Fig 569. The right testicle and spermatic cord were sensitive to pressure and it is of interest to note that they are also supplied by the same in

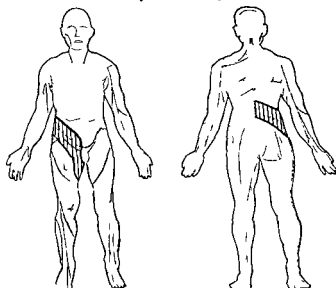


Fig 569—Rad l d t b t f b j t pa d ea f t
h pe lg l g t th d l t d l mb t

vol ed dorsal oots. You observe the flattening of the normal lumbar ventral curve and the tenderness present over the lumbar vertebræ on the right most marked at the third and fourth. The remainder of the physical examination is quite normal. The Roentgen ray examination shows marked hypertrophic changes on the upper four lumbar vertebæ with slight rotation of the body of the third to the left. Oblique fracture of the left lamina of the fourth lumbar vertebra extending into the articular process.

The therapeutic test a jacket for immobilization of the lumbar spine has given the patient the first comfort he has had since the accident.

This patient has had then an irritation to the posterior root of the tenth dorsal to the second lumbar nerve resulting in pain distributed along the course of these same nerves. All because the character and other attributes of the pain were not fully evaluated this patient was subjected unnecessarily to a hernioplasty and preparation for another surgical procedure in prospect. There are many patients who consult us with equally definite abdominal complaints but with the pathology located in the posterior root. Radiculitis such as this patient has and characterized by pain influenced by movement of the vertebral column or by other mechanical factors such as lifting, jarring, straining, coughing or sneezing is frequently overlooked. A complete clinical history containing all aspects of the story and a complete physical examination to rule out any lesions that might simulate the abdominal complaint are of maximum importance and will save us from error of commission and prevent errors of omission.

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VOLUME 8 1928
WITH 569 ILLUSTRATIONS

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